SCIENCE for PEOPLE

Autumn 1978

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THE NUCLEAR ISSUE

8 PAGE PULL-OUT

60p

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This issue is dedicated to everyone suffering and dying in the struggle for POWER to control their own life. May we find the ENERGY to overcome all those who lust after POWER over others.

Love from Science for People Collective

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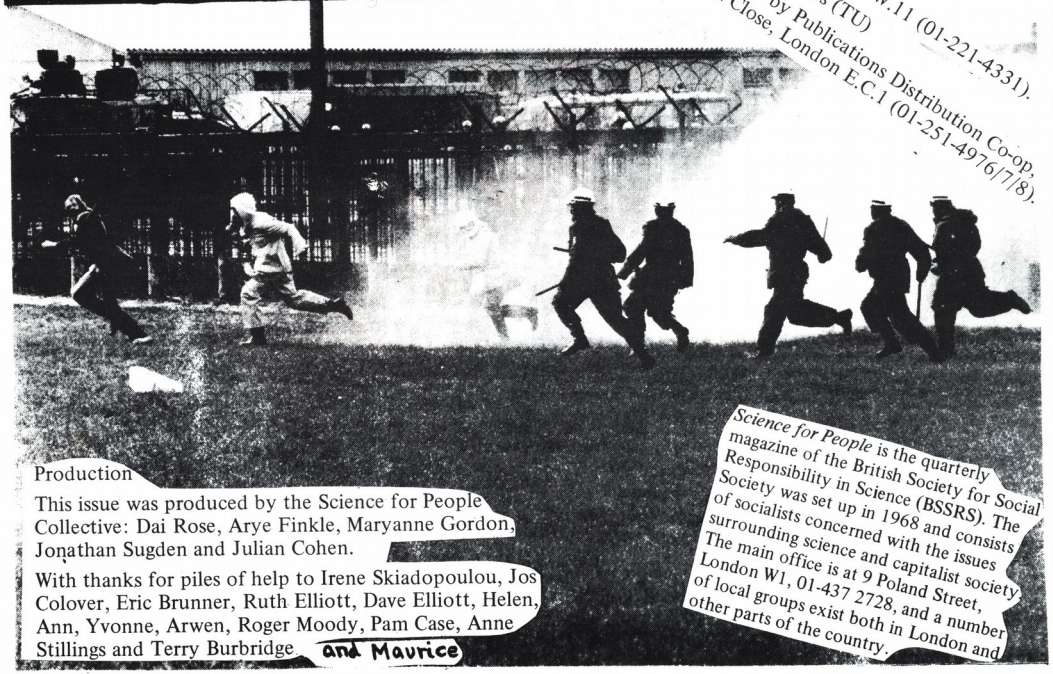

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This issue was produced by the Science for People Collective: Dai Rose, Arye Finkle, Maryanne Gordon, Jonathan Sugden and Julian Cohen.

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Science for People is the quarterly magazine of the British Society for Social Responsibility in Science (BSSRS). The Society was set up in 1968 and consists of socialists concerned with the issues surrounding science and capitalist society. The main office is at 9 Poland Street, London W1, 01-437 2728, and a number of local groups exist both in London and other parts of the country.

Demonstrators attempting to kick and bite police officers in Grohnde!

Editorial

So, at last, Science for People and friends have got something substantial together on NUCLEAR POWER. We've been building up to a nuclear issue for a time. The fact that a BSSRS nuclear group hasn't quite got off the ground didn't help . . . so this issue is partly meant as a rallying cry to such a group. Not only that. We feel that the nuclear 'debate' needs to be widened beyond 'apolitical' environmental arguments. The environmental issues are political (what isn't?) but we also wanted to raise other angles.

We've got basic information on nuclear power (see Nuclear Technology for Beginners p.18; Alternatives to Nuclear Power p.20; History of Nuclear Power in the 8 page pull-out section in the centre of the magazine).

We've also got articles about the Everyday Implications of Nuclear Power p.4; about Nuclear Hard-sell and the Third World p.38; Health and Safety inside and out of Nuclear Plants p.24; and Nuclear Power in Japan p.8.

The centre-pages pull-out has got lots of information on anti-nuclear groups and reading materials wrapped up in two FREE posters.

There's also a series of articles about where various organisations stand on the nuclear issue . . . (Trade Unions p.12; Friends of the Earth p.16; Feminist Perspective p.23; Left Groups p.37; BSSRS p.42.) PLUS a series of articles that look at the anti-nuclear movement to date . . . (one by Greenpeace on p.6; one on Scotland p.44; and two general ones on pp. 14 and 36.) And of course reviews, news and letters.

So we've got quite a bunch here. And there's more we could/should have produced. For example, there's little on the economics of nuclear power, the structure of the industry or why capitalism develops nuclear power when some sectors of the industry are clearly unprofitable. Hopefully we will follow up these issues in future editions of *Science for People*.

We haven't got a hard line on nuclear power . . . but as the articles,show, we feel strongly. Above all we feel the need to raise these questions with working people and trade unionists. They (we) have the power to do more than simply register disapproval. The real challenge is to fight for a viable alternative and develop pathways towards each and every one of us controlling our own lives.

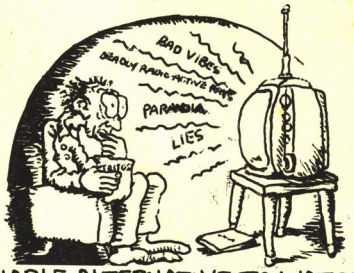
Science for People Collective

PULL OUT PULL OUT PULL OUT pages 27-34
CHRONOLOGY, READING LIST, GROUPS, POSTERS

Join BSSRS

If you are interested in developing the issues raised in *Science for People* and in converting them into political activity then you should join BSSRS.

Membership fees are £4 for full members and £1.50 for students and unemployed. For an additional £1 you will also receive the *BSSRS Bulletin*, which is a news-sheet designed to keep members informed of BSSRS activities and to be a forum for political debate on BSSRS work and aims. *Science for People* is sent free to all members of BSSRS. (Subscriptions to *SfP* only: £2.00 individuals, £5.00 libraries and institutions.)



THE VIABLE ALTERNATIVE TO WATCHING TV

WHY NOT JOIN A BSSRS WORKING GROUP— THERE'S WORK HAZARDS, HEALTH, FOOD & FARMING, GENETIC ENGINEERING, RACE & IQ, SOCIOBIOLOGY TO CHOOSE FROM.... AND

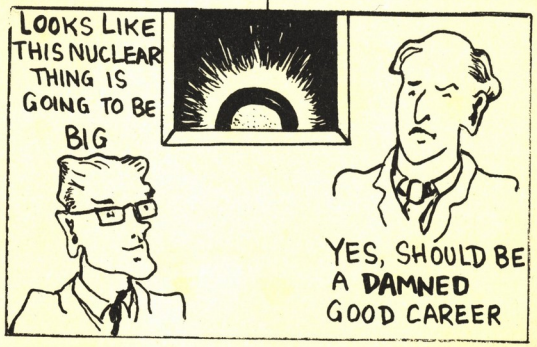
We're getting a BSSRS Nuclear Group together. Contact D.R., co-ordinator, 9 Poland Street, London W.1.

As we'd heard a bit about various exiciting shows — dancing, plays etc. — going on about nuclear power, we were really keen to have at least a listing of them in this issue. Unfortunately, one way or another we couldn't get that together in time. Here's a few groups we know about who've got a current nuclear show on the road:—

COUNTERACT, 27 Clerkenwell Close, London EC1. 01-251-4947

RED LADDER, New Blackpool Centre, Cobden Avenue, Lower Wortley, Leeds LS12 5PB. 0532-792228.

If you know any more about the above or any more groups doing shows on nuclear power, please write/ring us and we'll print it in the next issue.



NUCLEAR POWER— The Implications

NUCLEAR POWER CREATES JOBS at a phenomenal cost. Nuclear power is an extremely costly way of creating jobs. For example, it is estimated that the Windscale reprocessing plant will cost about £600 million and only result in 1,000 jobs. That means a cost of £600,000 per job, compared with an average of £100,000 in an advanced automated petro-chemical process plant and £20,000 per job in conventional industry. Nuclear power is the most expensive way ever devised for creating employment.

And what sort of jobs does it create? Most of the resultant jobs are of a highly technical and skilled type. Few of the work force are going to be recruited locally. Unemployment is high, likely to rise, and made up mostly of workers who have few marketable skills. Nuclear power won't help them get jobs. In fact, increased energy supply might make it even more difficult for them to get employment. The development of power station technology and the acceptance of productivity deals has resulted in a 27% drop in employment in the energy supply industry whilst our put has increased by 34%. And it should not be forgotten that increased energy supply is often used to power labour-saving devices in many industries, leading to structural unemployment across the board.

At a local level, the Gwynedd report on the construction of two nuclear power stations in North Wales showed that, far from relieving unemployment in a depressed area, such large projects actually make the situation worse.

Contrast all this with the job implications of an alternative energy programme, based for example on solar, wave and wind power and a national insulation programme. Such a programme would result in many jobs being created. (Detailed studies in the USA have shown that per unit energy such a programme would create up to 6.6 times as many jobs as an equivalently funded nuclear power programme.) This would create jobs all over the country, provide employment for many unskilled workers and give a tremendous boost to construction workers, the rate of unemployment among such workers being higher than in any other industrial grouping. Not only this, wind power is well-suited to the aerospace industry, wave power could provide employment in shipyards (eg building nodding ducks) and many jobs would also be created in engineering, electrical contracting and power trades.

NUCLEAR POWER IS CHEAP if you think 10% of Britain's gross national product just for energy is a bargain price. For if the UKAEA goes ahead with their full-scale programme that is what it's likely to cost. And who is going to pay for it? . . . Cuts in the health, education and 'welfare' budgets? (No government or industry boffin has suggested cutting the nuclear programme to appease the IMF.) The UK programme has already cost more than £2,500,000,000 and a parliamentary grant of up to £100 million is paid more or less automatically every year to the AEA under the heading of 'industrial innovation'. But we will pay for it twice over as there's the cost to the consumer. The days when American commentators suggested that nuclear power would be free to the consumer, as the cost of processing bills and collecting payment would exceed the cost of producing the power . . . well now the estimated price per unit of nuclear energy soars upwards. In fact the cost per unit, as estimated by official bodies has now been a gross understatement, as not all costs, particularly the huge research costs which the government lavishes our tax money on, are not taken into account. (See Colin Sweet 'Accountability and the Costs of AGRs' Electrical Review Vol. 202 No. 6, February 1978.) Compare such costs with those of solar panelling, wind power and insulation. There's no cheap nuclear power coming our way for sure.

NUCLEAR POWER – A MODEL OF INDUSTRIAL RELATIONS except for the workers. You see, if workers in nuclear plants take action it's bound to threaten 'national security' (as defined by government and industry leaders) and trade union rights can be suspended at the drop of an atom. In fact, BNFL and UKAEA have recently signed no-strike clauses with unions in the industry. But despite this, there have been a number of unofficial strikes. In February 1977 workers at Windscale went on strike for 7 weeks. The strike came to an abrupt end when the Secretary of State for Energy (yes, Comrade Tony Benn) threatened to breach the picket lines with troops and helicopters unless supplies were allowed through. But not only this. One of the strike leaders was threatened with the 1875 Conspiracy and Protection of Property Act by which strikes that threaten the 'natinal security' are not illegal but individual strike leaders are subject to criminal proceedings. The 1974 Trade Union and Labour Relations Act guarantees the right to peacefully picket (trouble is the police rarely seem peaceful when picketing is effective) and of course most workers are guaranteed the right to withdraw their labour – but not in the nuclear industry.

Of course, when it comes to collective bargaining, workers can draw on the Disclosure of Information Provisions in the 1975 Employment Protection Act. But such information can be withheld on grounds of 'national security', so workers in the nuclear industry may not get far on this one. And the 1974 Trade Union and Labour Relations Act guarantees that workers can contest unfair dismissal. That is, as long as government or industry chiefs don't whisper 'national security' in the ears of the Industrial Tribunal's chairperson. The case is then instantly dismissed. Much the same applies to the 1974 Health and Safety at Work Act where right of information and right of access can be withheld from safety representatives on similar grounds. This is particularly disquieting when one considers the potential health hazards in the nuclear industry.

To maintain security employees are screened for their suitability when applying for a job in the nuclear industry mainly as to their political views and contacts. Such vetting continues on an ongoing basis, particularly for key individuals (key jobs, safety representatives, active trade unionists, trade union officials etc) and all workers in the industry sign the Official Secrets Act to ensure nothing controversial gets out. The Flowers report commented that 'the activities might include the use of informers, infiltrators, wiretapping, checking on bank accounts and the opening of mail . . . we regard such activities as highly likely and indeed inevitable' (para 322, see critical reading list). The necessity for a docile labour force in the industry means that the state will go to great lengths to take both covert and overt actions against trade unionists such that in practice many trade union rights will be suspended.

NUCLEAR POLICE – NO COMMENT. Hardly surprising. Nobody talks about them. The 1976 AEA (Special Constables) Act told us little about the force. However, we do know that it is the UKAEA's own force, that its present strength is over 400, that it is not controlled by parliament, and that MPs who ask questions about its activities do not receive answers. The force is permanently armed with rifles and sub-machine guns; it can arrest people on suspicion, and it will grow as the nuclear

programme expands. Now, what would a sprightly little bunch of secret police be getting up to? Oh well, not to worry.

But it's not only the UKAEA specials. There's also MI5 and the Special Branch ferreting around. Apart from surveillance of workers in the industry, operations probably extend to political and environmental groups that are active in the anti-nuclear movement or might be seen as possibly making a nuclear bomb in the garden shed etc. And what would happen if there was a nuclear alert, plutonium theft, threatened sabotage etc? We can expect the police to be given even more widespread powers through counter-terrorist legislation (as if we haven't already got a start in the Prevention of Terrorism Act), general search powers enforced evacuation, restriction of movement and assembly, and suspension of Habeas Corpus. With regard to the media, we should expect strict censorship, but then again, the operation of the Official Secrets Act, D Notices, the secrecy surrounding the nuclear industry and close co-operation between the press and the state means that censorship of a more subtle nature probably occurs already (see 'Nuclear Prospects' in reading list).

NUCLEAR POWER UPHOLDS DEMOCRACY of the 'voluntarily hand over control of your destiny to big business and politicians or the law will come down on you' variety. So don't worry about the fact that the state will be concentrating its power by developing the nuclear programme, that the control over energy will be in ever fewer (well defended) hands and that workers' control over energy will be even more remote. And not to worry that the state is well aware that it gains more control over strategic industries by developing nuclear power. The *Daily Telegraph* didn't mean it when its leader at the time of the 1974 miners' strike urged an all out nuclear programme so that the miners would have less strategic power. But constrast all this with the potential in alternative energy sources whereby a decentralised system could enable *us* to have more control over our situation.

NUCLEAR POWER IS SAFE, the industry's statistics prove it! Radiation work and nuclear reactors and plant have always been controlled by uncertain standards. The standards have tightened little by little over the years. Radioactive krypton releases into the atmosphere considered by the establishment to be safe ten years ago, are now considered 100,000 times too large. 'Acceptable' limits of plutonium in air and water, are now known to be between five and four hundred times too slack.

Why the uncertainty? Health records are essential to chart the dangers of nuclear power. Available surveys of atomic workers only date back to 1962, at least twelve years after the industry was set up. Only in 1974 was a radiation register of all workers started. As radiation-induced cancers take up to twenty years to develop, it is easy to see how the nuclear industry has managed to evade responsibility for the significantly high incidence of leukaemia and myeloma (a rare bone cancer) amongst atomic workers. Evidence is starting to blemish the nuclear power safety record. In November 1977 BNFL paid out £30,000 to widows of two cancer killed Windscale workers, categorically admitting liability for the death of one.

Nuclear waste, highly radioactive and lethal, is steadily accumulating, but even the industry agree there is still no ultimate solution of how to isolate it from the environment for half a million years with no danger of radiation deaths. It is being 'stored' now in vats, with only occasional leaks.

Big accidents involving nuclear power plant can create massive contamination and large death tolls. Top management in nuclear industry are more interested in 'cosmetic public relations work rather than analysing the problems in depth', according to an ex-design engineer from Taylor Woodrow who worked at Windscale on the Hartley Pool and Heysham nuclear reactors (see *Undercurrents* no. 30 1978). Do management take large accidents seriously? Windscale Local Liaison Committee, set up to plan for emergencies following a huge radioactive release in 1957, were shown at the Windscale inquiry to be a sham. "Some of those, who in the event of an emergency would be required to take action under the plan, did not even know they had any responsibilities, let alone what those responsibilities were." (para. 11.30 'The Windscale Inquiry' Vol. 1 HMSO 1978)

The issue with nuclear plant accidents is that the potential damage and death toll is so high, that even the remote possibilities of accidents that the current safety equipment gives may be unacceptable. The industry do their best to gloss over this. "The risk of death is less than one death for each million reactor operating years." The figures on which this is based gives the possibility of a reactor accident (with a death toll of tens of thousands) as 1 in a *thousand* million for each reactor operating year. However the UKAEA's own spokesman has stated 'I doubt whether our engineering capacity can take us lower than 1 in a million per reactor year. In my opinion it is hard to show a failure rate in the range 1 in a million to 1 in ten million with reasonable confidence' (director of UKAEA Safety and Reliability Directorate at a conference in Jülich, West Germany). "We have had 300 reactor years without serious incident." With a supposed risk of one big accident every thousand million reactor years is this proof of safety? Is it true? In 1973 a major fire at Windscale released a relatively small amount of radioactivity in to workspace, contaminating 35 workers. The accident could have been twenty thousand times worse. Nine other accidents have occurred there, each potentially fatal. With a criticality accident, a myeloma death and a 'nuclear train' derailment to its credit the spotless nuclear record has caught acne, and the next few years will show increasing embarrassment if people see the nuclear industry's real face.

NUCLEAR POWER IS NEEDED – TO KEEP POWER FROM OUR HANDS. We have shown that there is no benefit for working people in the development of nuclear power – if anything, we have much to fear from its development. It threatens to swallow enormous amounts of our money and resources, for very little return in the way of employment, to consolidate the power of big business and the state while putting our own lives, and those of countless generations to come, at risk.

Apart from this, we should also realise the impact on Third World countries both in terms of misappropriation of their resources, the exploitation of their labour power, and the control of their economies through the presence of imported nuclear technology and expertise on their own soil. And, of course, we must ask whether we really need nuclear power to generate an increased energy supply. Must our economies go on forever expanding, and does that really make for a better standard of living for all? Shouldn't we be looking carefully at alternative forms of energy supply, particularly in renewable resources and energy saving technologies and ways of living. It is clear that a sane, democratic society is incompatible with the development of nuclear power. The struggle for such a society involves the struggle against nuclear power.

'WORKERS' POWER NOT NUCLEAR POWER.'
'CLASS WAR NOT NUCLEAR WAR.'

Maryanne Gordon and Julian Cohen

Further reading on implications of nuclear power for trade unionists:

D. Elliott et al: *The Politics of Nuclear Power*, Pluto 1978.
M. Flood and R. Grove-White: *Nuclear Prospects*, 1976.
R. Lewis: *Nuclear Power and Employment Rights*, Industrial Law Journal, March 1978.
SERA: *Meet your new Industrial Relations Manager*, 1977.
SERA Energy Group: *Nuclear Power – Why not?* 1978.

From Symbolism to DIRECT ACTION

10,000 people — was it worth it?

The Windscale demonstration was the latest in a long tradition of typical London demos, i.e. assemble in Hyde Park, march along Oxford Street, turn right down Regent Street, and reassmble in Trafalgar Square, all facing Nelson's column to hear pearls of wisdom from the eminent personalities of whichever movement organised the event. The Windscale demonstration followed this formula exactly and could have been expected to have the traditional effect of such events — no effect at all. But this one was going to be different. FoE, the organisers, had been politely exchanging views with representatives of government, UKAEA etc. and were confident that a massive turnout would add irresistible weight to their arguments — after all, this *is* a democracy, isn't it? So what happened? The number of people who took to the streets amazed everyone, not the least FoE; 10,000 people whose politics ranged from anarcho-syndicalist to the Survival Party, whose big green banner bore a motif curiously reminiscent of a Mosleyite sunflash. And what good did it do? — Sod all. The mass demo proved once again to be merely a harmless way of sublimating discontent, without undue inconvenience to the authorities. The Windscale march has, surely, shown that the centrally organised massed procession through London is as anachronistic as the dinosaur — and the sooner it follows said beasts into extinction the better. New tactics were obviously required and the opportunity soon arose with the proposal of an occupation at Torness.

Torness — a breath of fresh air and a step in the right direction

Torness, in south east Scotland, currently the only 'green field' site in Britain, is part of the new phase of the AGR development recently authorised by those in power. Only a moron could contemplate building any industrial installation, let alone a nuclear reactor, on an obvious beauty spot which also happens to be good farming land.

The weekend event, organised by the Scottish Campaign to Resist the Atomic Menace, SCRAM, began in Dunbar, where several hundred people gathered to march the five miles to the site. Having driven through pouring rain all the way from London, the prospect of grey skies and a chill wind dampened most spirits. But in the afternoon the sun shone, as it did for the rest of the event, and the demonstration visibly swelled in numbers until about 4,000 were assembled at Torness. A camp was established, followed by numerous workshops on non-violent direct action, women against the nuclear programme etc, films were shown on other occupations, Seabrook and Kalkar, and later in the evening there were bands. Sunday morning was taken up by more workshops, amongst them, one on the Stop Urenco Campaign,

about which more will be said later. Finally at about 4 o'clock a declaration of opposition to the building of the reactor at Torness was read and an effigy of a reactor was burned, after which most people began to leave.

Provisions and problems

Generally the march and occupation were well organised, the site being equipped with a stage and PA, adequate toilets, food provided by Bath Civil Aid, marquees housing exhibitions on alternative energy, and bookstalls. The reaction of local people in the immediate vicinity of the site seemed good – but in the local pub only three miles away we were met by ignorance and indifference. On telling the locals we were occupying the site we were assumed to be construction workers until we said otherwise – then the response was apathetic. Although the local farmers seem to be sympathetic and have since demonstrated this feeling, if the site is occupied in the future on a long-term basis to stop construction work, continued support from the local people will be vital. Next time we won't have the permission of the farmer (who does not own the land), the SSEB (who do), or the police. If the nearby shops refused to serve us the situation would rapidly become impossible. More work at grass roots level is essential.

Some problems on-site resulted from the blatantly sexist lyrics of most of the songs performed during the evening which led to protest from a group of women who, on the Sunday afternoon, had to hassle for half an hour to use the PA equipment to point out that insulting half the people on the site was not a good way of promoting solidarity. This possessiveness over the PA and the electric bands is an example of the kind of centralised hierarchical organisation and one-way communication the anti-nuclear movement should be opposed to.

The Stop Urenco workshop takes off

One of the most important results of the various discussions and workshops held at Torness was the launching of the Stop Urenco Alliance, initiated by Roger Moody of CIMRA and Pieter Lammers of the Dutch LEK (National Energy Committee). The discussions involved large numbers of occupiers who actively participated in the talks and unanimously supported the call for action against the embodiment of Urenco's presence in Britain – the uranium enrichment plant at Capenhurst, Cheshire. This call was not just for symbolic protest but for militant action to demonstrate the deep feelings held by thousands of people in this country against nuclear installations. However subsequent organisation of the event effectively dissipated this spontaneous militancy into the grey non-event at Capenhurst.

Why stop Urenco?

Uranium enrichment is one of the more sensitive nuclear technologies in that it is open to mis-use by those wishing to produce nuclear weapons. Urenco is a tripartite governmental consortium, Anglo/Dutch/West German, which operates enrichment plants at Almelo and in Amsterdam which drew support from all over Europe and created such a public outcry, in particular over the Brazilian contract, that the Dutch government was very nearly brought to its knees.

From its very inception in this country the Stop Urenco Alliance has been consciously attempting to work in a decentralised way. By the time of the Torness workshop, support had already been established in areas with access to Capenhurst (i.e. the North West) confidently to plan some sort of action there. At this point it is interesting to note that much of this support was coming from local FoE groups acting independently of FoE central, who remained aloof from the campaign. All policy and major decisions for the campaign were decided by delegates from the groups at the national meetings (held in Warrington and Chester). Although this was a drag at times, it did mean that what happened reflected the consensus of opinion. However, in this case, a few people more used to more centrist control managed to influence decisions and the last minute management of the event.

In line with the policy of decentralisation the concept of affinity groups, as recently used to good effect by the Clamshell Alliance, was encouraged as an organic rather than a hierarchic form of organisation. With a few exceptions this idea did not come to its full development in time for Capenhurst, but this is certainly where the future lies.

Capenhurst – a wet lesson

The march to the Capenhurst plant began in Chester and gently promenaded to the outskirts where those less stupid than most took the free transport for the other five miles to the site. Now left with the hard core of idiots, led by several saffron-clad Buddhist percussionists, we dripped disconsolately through the persistent drizzle, shepherded by stewards of dubious origin – and not even a pub in sight!

By the time we reached the site, some bureaucratic mandarin had commandeered the PA and officiously directed proceedings for the rest of the afternoon. There being no 'big-name' speakers on hand, we all huddled together for warmth, commiserating in groups laughably described as workshops. We were then inflicted with a series of spokespersons representing the various workshops, who harangued those left with reports of subjects not discussed and decisions not taken. Finally we were released to take our respective homeward paths.

Obviously it wasn't only the organisers who anticipated large crowds. The local forces of law and disorder overtopped our 400 by a comfortable margin, although they tried to keep out of sight. BNFL's agents took good notice of our deliberations, making full use of their audible monitoring devices and taking many a snapshot for posterity. No doubt their day was more profitable than ours.

As you have probably gathered we weren't totally happy with the event. We tried to make it organisationally different but probably concentrated too much on what we *didn't* want without developing constructive alternatives. Despite all the hassles we did learn some lessons – the basics of countrywide co-operation between mainly autonomous groups – the establishment of practical communication arrangement, and how to ensure a continuing decentralised structure, which is essential for the long term organisation of the anti-nuclear movement.

Heysham – will things be different?

At the time of writing we're in the middle of preparing for the next action, a weekend demo at Heysham where one reactor is now complete, though not yet commissioned, and where the CEGB are about to start building another to keep it company. By the time you read this Heysham will be history (and some of us may be encamped at Torness) so you will be able to judge for yourselves how effective the Heysham event was.

There have been a number of changes in the anti-nuclear movement in the short time from Windscale to Heysham and we have tried to chronicle the major ones in this article. Conventional symbolic tactics have failed. It's no longer enough to sit back and send out subscriptions to large conservationist organisations with plush offices and connections in high places, and expect them to do it all for us. It's obvious that the government (all the state's apparatus, not just the elected Labour MP's) is committed to a nuclear future irrespective of the wishes of the population. If we want a non-nuclear future we must be committed to some fundamental changes which won't come about by endless discussions with people who aren't listening. The state can ignore our symbolic protests and our tame experts. An effective anti-nuclear movement will be committed to nonviolent direct action and as decentrally organised as the society we are fighting for.

Danny, Steve and Chris of Greenpeace, London

nuclear TALES FROM JAPAN

Apart from a small nuclear reactor imported from Britain for research purposes, work was begun on building Japan's first commercial reactor in 1965. By the time it was fully operational in 1970, few people had spoken out against it and there was certainly no general consciousness of its possible dangers. The preceding twelve years of pronuclear government propaganda had softened up the general public to the extent that even the Socialist and the Communist Parties were taken in by it. The government had been at pains to emphasise the distinction between nuclear power and nuclear weapons and only a few isolated academics had attempted to point out that nuclear fuel products could also be used for military purposes. Indeed, nuclear power generation had begun only a few years earlier in the US itself, and very little information about its hazards had been forthcoming.

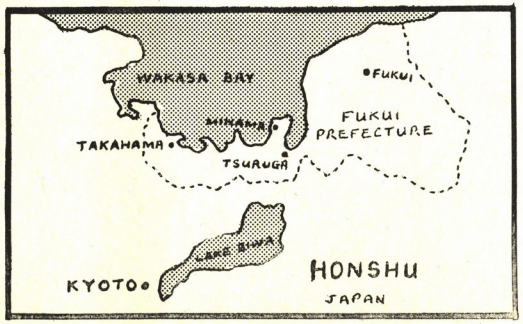
Early in the 1960s, the Japanese Diet passed the Fundamental Nuclear Power Act. Three of its main points were that:—

1. Nuclear power would be developed by and entirely under the control of the Japanese government.
2. Its use would be democratically controlled, e.g. local government could object to the siting of plants in its area. (This point appeared in the preface, but was inexplicably omitted from the main text.)
3. All relevant information would be made public.

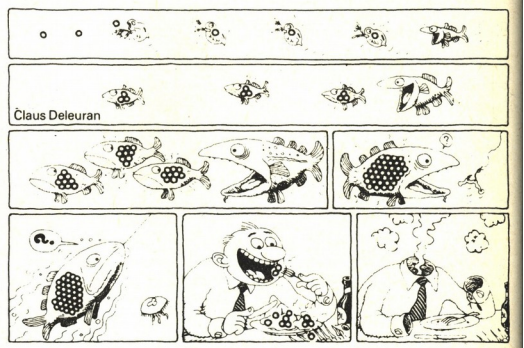
The government "guaranteed" that there would be *no* radiation leaks, and promised that the nuclear power programme would have no adverse effect upon the environment.

All is not well in Fukui Prefecture

Not long after the Tsuruga no. 1 nuclear power station in Fukui Prefecture became operational, the people living around Wakasa Bay noticed that, where the Tsuruga cooling water was being pumped into the sea, the seaweed was growing more profusely than in other places. Subsequent tests revealed elements of cobalt 60 in shellfish and in the sediment around the bay. The pro-nuclear pamphlets distributed free of charge by the government in vast quantities had repeatedly stressed that nuclear power generation would be "completely without radiation leakage". After the Wakasa Bay observations, the wording was subtly changed to "harmless amounts of radiation only"!



About four years ago, the Fukui Prefectural Marine Resources Laboratory issued warnings that shellfish near the reactors should not be eaten and that operators of fishing boats hired out to tourists should avoid these areas. The warnings were not taken up by the Legislature, however, and the local fishermen, while reluctant to eat the fish themsleves, were free to sell their catch to distant parts. The fishermen are poor; they belong to fishing co-operatives and usually own their own boats. The policy of the nuclear power companies had been to buy up the land for the sites some ten to fifteen years earlier, before any protest movement had developed. They then offered tantalisingly high prices to the local fishing co-operatives in return for their fishing rights. The fishermen, thus left without any ongoing means of livelihood, joined neighbouring co-operatives. But they now suspect that fish may be affected in these areas, too. Two years ago, they began to demand that no new reactors be built.



Trouble at Mihama No. 1 Site

Early government propaganda had promised that electricity generated by nuclear power would be cheaper than that produced by burning fossil fuels. This was based on the assumption that plants could and would be run at 90% efficiency. But of the nine operational reactors in Fukui Prefecture, five have had to be shut down at one time or another for unscheduled periods, and in the autumn of 1977, only two were actually operating. In practice, all the reactors were forced to run at drastically reduced efficiency, including the one at Mihama no. 1 Site, which has been operating at near zero efficiency for the last six years! In June 1972, a significant level of radioactivity was discovered in the secondary cooling loop and the trouble was traced to the

primary system. On closer inspection, 110 of the heat exchanger tubes were found to be defective (i.e. the wall thickness of the tubes was found to be corroded to less than the permissible thickness). An improvised repair was made by "plugging" the defective tubes with copper wire. The reactor was run for a further six months but, by 1973, of the 10,000 tubes in the heat exchanger, some 2,000 were found to be defective.

A committee set up by the Diet to inspect Mihama no. 1, recommended that for the time being inspections should be carried out every six months (instead of annually) and that the reactor was to be run at only 40% of maximum capacity. The reactor was started up again in September 1973 and ran for another six months at 40% capacity, but at the next inspection, it was found that more tubes were corroding. After further plugging, it ran for only forty-two days before radiation leaks were detected – the rate of degradation was accelerating. Mihama no. 1 was finally closed down in July 1974.

Explanation number one put out by the Government and the Kansai Electric Power Company claimed that, although all three reactors at Mihama were manufactured by Westinghouse, the heat extractor in the no. 1 plant was built by the Combustion Engineering Company (also US). However, inspections of the other reactors revealed similar problems and proved the Government explanation irrelevant. Explanation number two claimed that the anti-corrosion chemical added to the water in the secondary cooling system was defective. It was suggested that if hydrazine were to be used instead, no more corrosion would occur. Accordingly, all three Mihama reactors were converted, as were all the others of the same design used by Kansai Electric in other locations. But although the Takahama no. 1 reactor in the same Prefecture was changed over to hydrazine in November 1974, one year later, 1% of its tubes were found to be corroded. The excuse given for this was that it had not been cleaned out thoroughly before its conversion – but by now, people were beginning to become a little cynical of government excuses and explanations.

The Government backs down

According to a book on nuclear power in Japan published in 1976, the workers at Mihama no. 1 were of the opinion that the plant had been closed down because of a near-disaster situation rather than due to cooling tube damage. This was strongly denied by Kansai Electric and the government, but they refused to publish the results of the 1973 inspection. A group of radical scientists accumulated enough data to draw the inference that the story was probably true. During the summer and autumn of 1976, the Socialist Party collected documents to prove that something serious had gone wrong in the reactor core, and their members in the Diet began to put pressure on the government to release details.

The Ministry of Trade and Industry sent another team to inspect the plant and, in December 1976, the government admitted publicly that there had been a fault in the core. The Kansai Electric Company could then no longer deny the truth and admitted that the near-accident had been discovered during the 1973 inspection. (Ironically, only two weeks earlier, at an inquiry called by the citizens of Ikata to protest against the construction of a new reactor, the government expert, Professor Mishima of Tokyo University, had testified that the construction of the core was completely safe.) Kansai Electric claimed that since the cause of the accident was due to *human* negligence in the handling of the tubes containing the fuel rods (two of which had split open releasing fuel into the cooling system) and had not been caused by "normal usage", they had not felt obliged to disclose this in their report!

On December 19th 1976, the Fukui Citizens Council Against Nuclear Power (which had only been formed the previous July) got wind that Kansai Electric was about to transport the defective rods by truck along the prefecture highway from Mihama no.1 to the government research stations at Tokai-Mura. Normally, the rods should have been stored until their radiation had diminished to an acceptable level. The Citizens Council immediately called a demonstration outside the site, and about 150 workers, members of the Sohyo Labour Unions, together with Communist Party and Socialist Party Diet members, sat down in the middle of a snow storm, blocking the causeway leading out of the site. 250 riot police arrived and proceeded to drag the demonstrators aside.

The organisers decided to call off the sit-down, but many of the demonstrators were angry and wished to have stayed put. It was a very radicalising experience for those who had not participated in direct action before.

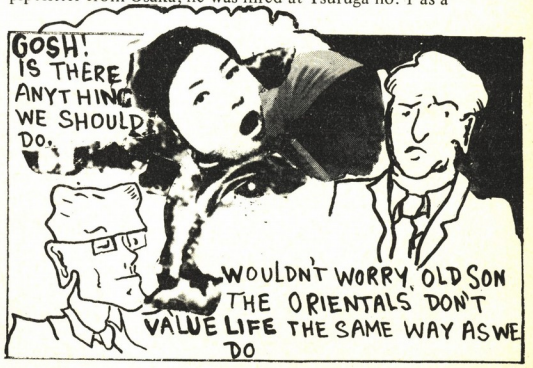
The Ministry published its official report in August 1977. This directly contradicted the report by Kansai Electric, indicating that the breakdown had occurred during normal operations due to clips holding the tubes containing the rods working loose, and allowing the tubes to vibrate with the cirulcation of the water. The fuel in the reactor core had not melted, it was claimed, and the problem could be solved simply by tightening the clips.

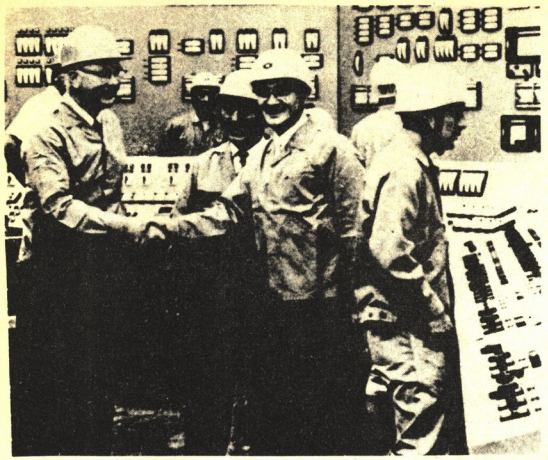
The local activists naturally have no confidence in this explanation, nor in the experts' ability to understand what happened, especially since it had taken three years before the Ministry allegedly knew the real results of the inspection. Was the government inept or was it covering up? Either way, the Citizens Council decided that the government could not be relied on to look after their interests. Because Westinghouse will not disclose details of their reactor technology, inspection of these plants can only be carried out by Westinghouse experts. Thus, the Kansai Electric Power Company get their information second-hand and the government third-hand!

Hazards of work

In a pamphlet published in August 1977 by the Japan Council Against the Bomb on the 32nd anniversary of the atom bombing of Hiroshima, the figures and graphs show that the workers involved in inspection operations of nuclear plant are being subjected to increasing doses of radiation, and that the number of workers required is also therefore increasing as the plants become progressively more contaminated. The inspection workers are usually poor and out-of-work and get offered extremely high rates to work for one day only. In theory they are not supposed to work inside a reactor more than one day a year. In practice, however, there is nothing to stop them going round to different reactor sites obtaining a day's work at each, in order to earn more money. The company keeps no check on them. The pamphlet suggests that their cumulative radiation levels could be far in excess of the 5 rem per year which is the legal limit.

The case of Kazuyuki Iwasa is not, perhaps, untypical. A pipefitter from Osaka, he was hired at Tsuruga no. 1 as a





temporary worker in May 1971. The reactor had been shut down when abnormal amounts of radioactive iodine were discovered in the primary coolant. Iwasa was ordered to drill holes inside the reactor, and feeling tired after some three hours of this work, he knelt down and continued drilling. He says he was not warned by the company of any particular danger. When he got back home to Osaka, he discovered that his knee was discoloured. A week later he felt sluggish, fatigued and developed a fever. He went to a doctor who diagnosed the discolouration as due to abrasion and sent him away with some medicine.

One year later, Iwasa's health had deteriorated considerably and he was examined in a hospital where he was found to have an abnormally low white blood cell count. He was then sent to a geriatric clinic but was told there that there was nothing wrong with him. Another year passed without any improvement and he again went for a hospital check-up. This time, his condition was diagnosed as the probable result of exposure to radiation. He was examined by a team of radiation disease experts from Osaka University who investigated all the circumstances surrounding his case and decided that his illness was likely to have been caused by his reactor work.

Iwasa filed a complaint with the government Industrial Accident Compensation Bureau. Its Tsuruga office "investigated" the case and, on the basis of information supplied by the Japan Electric Power Company who operate the Tsuruga reactor, decided that his reactor work was not connected with his present condition. Iwasa appealed against this decision and has filed a law suit against the company. But in the meantime, he cannot earn a living and is without compensation. The Citizens Council has set up a fund to help him live and to fight his case, but the power company is trying very hard to avoid accepting responsibility – for no company so far has been held responsible for such accidents, and *this case could set a precedent for thousands of other workers.*

The companies have always been able to claim that contamination was not necessarily caused by work done in their own plant. Iwasa cannot call witnesses because he has been unable to trace them. His co-workers were all casual labour picked up from the poor quarters of the big cities and offered ¥30,000 for a day's work. Needless to say they do not belong to any union.

The Fukui Citizens Council Against Nuclear Power

Before the present Council was established, there had existed several small groups of people, including some fishermen's groups, who opposed construction of new nuclear power stations. Their activities usually took the form of collecting signatures. In February 1976, when plans for a Fast Breeder Reactor were announced, many local protest groups, together with the Sohyo labour unions and the Socialist Party began to co-ordinate their activities. In July of that year, the Fukui Citizens Council Against Nuclear Power was founded at a meeting convened by the leaders of environmental groups, fishermen's co-ops, and the Victims of the Hiroshima Bombing. The meeting decided against affiliating to any political party, but both the Socialist and the Communist Parties have affiliated to the Council, as well as a few individuals from the Komei (Buddhist Party) and the right-wing ruling Liberal Democratic Party.

Most of the *permanent* Kansai Electric workers are members of the Domei, a small right-wing union which has refused to affiliate to the Council. But it is significant that the main labour unions and the environmental groups are working together. Of the 50,000 members of the affiliated groups (30,000 from Sohyo alone), the number of reliable activists is, however, closer to one hundred.

The Citizens Council's two basic demands are, (1) that no *new* plants should be established, and (2) that the causes of *all* accidents to date must be established before *any* of the closed-down plants are allowed to start up again. Its activities include the production of educative and agitational literature, organisation of demonstrations, marches and pickets, public education and approaches to prefectural and city councils. These latter meet four times a year and the Citizens Council presses them to adopt resolutions opposing new nuclear development. The Council is not dismayed that all the resolutions have so far been voted down. They say that this does not mean that the city councillors are all in favour of nuclear energy but rather reflects their members' lack of political consciousness and their traditional allegiance to the establishment. Nevertheless, the Citizens Council is becoming recognised as the focus of opposition to nuclear power and it is the group that people turn to when they need help.

Public education is considered vitally important in combating the near-monopoly of information by the bourgeois media. Despite the fact that the amount of literature produced by the Citizens Council is far outweighed by the masses of pro-nuclear propaganda churned out by the power companies and the government, people are very gradually being won over. Last summer, Socialist Party members placed questions on the Fukui Council agenda, to force hearings on the nuclear debate *in public* and with the participation of representatives of the Citizens Council. All this was fully reported in the bourgeois press and, if nothing else, people were at least able to see just *how little* substantive discussion is allowed in the city council!

The Citizens Council places special emphasis on demystificatio demystification of the nuclear debate. Members speak at street corners from loud-speaker vans, and see their task as supplying information rather than rhetoric. Their street petitions are signed by about seven out of ten people and they say they are able to collect six to seven signatures an hour. This seemingly slow rate reflects the fact that people want to stop and ask a lot of questions, all of which have to be answered. In this way, they see the petition as having a very educative effect. The Citizens Council also organises study classes in different locations, e.g. near to reactor sites. These are primarily to educate their own activists but they are also open to the general public. The classes are usually very well attended with fifty to one hundred people in each. They deal with very basic questions. A typical series of six classes might include:

1. Why is nuclear power unsafe?
2. What is a Breeder Reactor and what is a nuclear fuel cycle?
3. Radioactive pollution.
4. Concentration of nuclear power plants around Wakasa Bay, ecology, and the effect on people's livelihoods.
5. Future potential sources of energy.
6. Administration and control of the nuclear industry.

The classes are taught by volunteer specialists from different universities, including social science teachers and sympathetic lawyers. In fact, most of the activists are working people. Students have, so far, not been very involved, partly because they have been so tied up in the Narita Airport struggle. Now that Narita Airport is finally open, it remains to be seen whether the student left will see the anti-nuclear campaign as a new struggle worthy of their support.

Arye Finkle

With acknowledgements to Ms Miwako Ogiso, Chairperson of the Fukui Citizens Council Against Nuclear Power, who supplied much of the information upon which this article is based, and also to Dan who acted as interpreter.

ALDERMASTON AGAIN!

Security measures at the Atomic Weapons Research Establishment at Aldermaston mean that little more is likely to be known about the dangers of plutonium contamination at the site. Cameramen have been banned from filming anywhere near the AWRE, and employees have been warned against giving interviews.

Press reports about the matter have come up with numerous discrepancies. On August 15th the Ministry of Defence disclosed that three women at the AWRE at Aldermaston had excess plutonium dust in their lungs – at up to twice the internationally recommended safe level. They work in a laundry for protective clothing worn in areas where radioactive materials were used. The laundry was closed.

A few days later it was revealed that one of the women had not worked in the laundry – or any other 'active' area – for ten years. Newspapers mentioned the possibility that the level of plutonium found in her lungs might have been the residue of a much larger amount. The possibility that a supposedly 'safe' area might be contaminated was not taken into account.

The day after the reports on the three women first appeared, it came to light that nine male workers at Aldermaston also had excess amounts of plutonium in their lungs. They had been employed in preparing radioactive waste for disposal and in "metallurgical processes involving plutonium" – (making bombs?).

The MoD has admitted that twelve people out of less than 100 tested were affected by excess plutonium levels. However, according to the *Morning Star* (August 18th), the AUEW and TGWU are backing compensation claims by 16 Aldermaston workers.

Because it is supposed to be Top Secret, Aldermaston has been able to get away with health and safety standards well below those of civilian nuclear establishments. Screening for contamination by whole body monitor has been used for Aldermaston workers only since January of this year. British Nuclear Fuels have been using such tests since 1967.

The Health and Safety Executive have been trying to persuade the AWRE at Aldermaston to introduce whole body monitoring for two years. There has never been a systematic inspection of the whole establishment at Aldermaston with regard to health and safety measures. Discussion of these outside the site is forbidden by the Official Secrets Act.

'Dirty' reputation

The preoccupation with secrecy is probably the reason why there has been no publicity for previous cases of plutonium contamination at Aldermaston. Among civilian scientists involved in radiation protection, Aldermaston has the reputation of being a very 'dirty' site. Systems have had to be changed in the past because of danger of contamination.

It was only after the MoD's disclosures this month about the three laundry workers that the news came out that there had been a case of suspected excess of plutonium in February, and another in March – when the waste disposal unit was closed for two months.

Workers at the site have already told Sir Edward Pochin, who is conducting an enquiry into health and safety at Aldermaston, about some of the previous incidents. Mr George Hughes, chairman of the joint union executive, said, "I have asked him to look at incidents here in the past. Particularly, I have asked him to look at the design of certain installations where extracting systems have been found to be inefficient."

One gets the impression that "previous incidents" have been alarmingly frequent. The MoD seem to be doing their best to hush things up and minimise the extent of the danger. It has announced that checks will be made on former Aldermaston employees, and also those in regular contact with radioactive materials will be screened. This would be perhaps about 2,000 people – the exact number of those employed at Aldermaston is an official secret.

The MoD says the risk of lung cancer for workers with the maximum safety level of plutonium is 1 in 700,000. The Medical Research Council, however, puts forward the much higher risk of 1 in 1,000.

Nor is the MoD willing to consider possible danger from radioactive dust straying in to supposedly safe areas, including areas outside the site. Some local residents are worried that sewerage and drainage may provide possible outlets for further contamination.

On Sunday 27th August there were more contradictory statements in the press. The *Observer* carried an 'exclusive' article stating that the three women originally suspected to have excess levels of plutonium had been cleared after further tests.

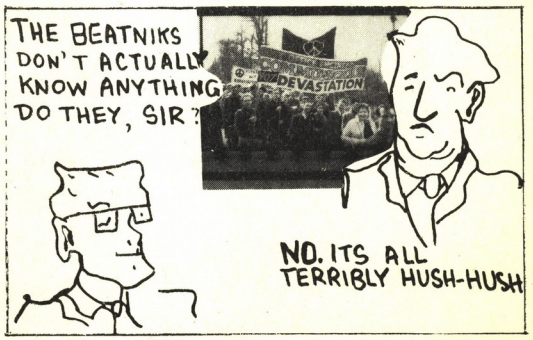
It claimed that the second tests would be more accurate because surface skin contamination would have worn off in the two months.between the first and second tests. All very comforting – but not very credible in the case of the woman who had not worked in a radioactive area for ten years.

The *Sunday Times* was more careful. It reported that only two of the women had been cleared. The MoD have not confirmed any of the results.

Steps have been taken to put the public's mind at rest and stop it prying into things the MoD doesn't think it should know. The government has ordered an independent enquiry, to be conducted by Sir Edward Pochin, an adviser at the Windscale enquiry and tame radiation expert for publicity purposes. He is due to report in two months. He started off by making a reassuring statement: "My first priority is to establish just how many people have been contaminated, and how high the level of plutonium was in each case."

There has been some disagreement in the press about how long testing takes – figures given have varied from 7 people per week to 6 per day. If, as the MoD says, 2,000 people are to be tested, even at the maximum rate of 6 a day it will take at least 11 months. A report in two months time stands little chance of making a fair assessment.

This report is reprinted from the September 5 issue of 'People's News Service', an excellent general news fortnightly (25p) of interest to anyone who is sick of reading their news of the world from between the lines of the dailies. 'PNS' is having some problems with funds, and your support in the form of donations or readership would help to sustain a valuable service. At only £2.50 for 10 issues it's well worth it. From: PNS, 182 Upper St, London N1.



WHAT ? SAY THE UNIONS

At present most British trade unions follow TUC policy in supporting the expansion of the nuclear power programme. The basis of this policy was clearly stated in the TUC submission to the Windscale enquiry . . . 'Economic growth is needed to secure full employment and rising living standards . . . Economic growth requires increasing supplies of energy . . . the nuclear industry will need to be able to make a sizeable contribution to Britain's energy supplies by the late 1990s.'

The TUC Fuel and Power Committee is extremely conservative in its conception of possibilities for future energy supplies. Its use of classical economic arguments is enhanced by an over estimation of future energy requirements and underestimation of alternative energy sources. For example at the Windscale enquiry the TUC asserted that energy requirements will need to be 600 million tons of coal equivalent (MTCE) by the year 2000 and that alternative sources (wave, solar etc.) would only contribute 50 MTCE. Yet 'official' estimates of future energy demand have been continually falling (estimates for the year 2000 being 450 MTCE and estimates by the Science Policy Research Unit at Sussex Univesrity being as low as 335 MTCE, current level being 342 MTCE) and estimates of savings from conservation and use of alternative sources increasing.

These sorts of arguments together with trade union concern about members' job security, particularly in nuclear plants and equipment supply firms, has led to a general pro-nuclear stance. Thus most unions follow the TUC in supporting the Fast Breeder Reactor programme, the expansion of the Windscale plant and the nuclear programme in general. The main unions in the industry such as the GMWU, EEPTU, TGWU and AUEW all support nuclear power as does ASTMS, TASS and even the NUM. These unions are concerned about health and safety in the industry but see this as a problem that can be overcome.

However, there is a growing opposition to nuclear power in trade unions. For example, the Yorkshire district of NUM is against the expansion of the nuclear power programme and has backed Energy 2000, a group fighting against nuclear power. TASS and ASTMS have had anti-nuclear power resolutions put at their annual conferences, though they were not carried. NALGO presented a critical amendment to the Energy Motion debated at the 1977 TUC. It argued that:

> "It would be unwise to develop too great a reliance upon nuclear power as a major energy source for the future until there is no reasonable doubt about our ability to solve the problems of:

1) potential hazards to health
2) long term environmental pollution
3) security of nuclear installations and materials
4) the vast capital expenditure involved."

The amendment went on to urge the Secretary of State to "delay any firm and irrevocable decisions on future developments in the nuclear energy programme, particularly on the commercial fast breeder reactor, until there has been a realistic and informed public debate on all the issues" and to ". . . provide a much greater investment in research programmes dealing with methods of energy conservation and the use of other sources of energy (solar, tidal, wind etc.) so that clear non-nuclear alternatives can be presented in the final argument".

Indeed the NALGO document on energy policy stresses that "ill informed debate could be avoided if there was less secrecy surrounding decisions." These arguments were not taken up at the TUC but do illustrate that it is not all plain sailing for the pro-nuclear advocates.

It is important to not only look at what unions say about nuclear power but also what they don't say. Their analysis of implications for jobs is short sighted and does not take into account the huge expense of jobs in the nuclear industry and the many jobs that could be produced by an alternative energy programme. The potential impact on public expenditure of a full scale nuclear programme is discussed only by NALGO. Most important of all, few unions have even considered the actual and potential impact of the nuclear programme on trade union rights. The only exception seems to be the TUC submission to the Windscale enquiry, but the way the TUC ducked the issues shows that workers have much to fear in this respect.

The TUC pointed out that 'restriction of trade union rights of disclosure of information and the accompany security and secrecy arrangements already exist for those trade unionists in the UKAEA and BNFL sites.' (For example under the safety regulations, the safety representatives would not be allowed access to information or details of hazards and accidents or to their members workplaces if the disclosures are against the interests of 'national security'.) The TUC have not seen how to resolve this problem merely stating that 'trade union safety representatives appointed under the safety regulations having met relevant security requirements should have access to health and safety information details of hazards and accidents and access to their members' workplaces.' This rather suggests that the TUC are happy to co-operate in vetting of workers and, in particular, safety representatives.

Similarly with regards to strikes the TUC said that unions and BNFL should have discussions and agree on 'steps which must be taken to protect the plant and the community if a dispute develops', through the Joint Industrial Council. Whether any such 'agreement' can be reached which preserves workers' rights to strike or picket must be doubted, as incidents surrounding the 1977 Windscale strike demonstrate.

In conclusion we can see that although most unions advocate an expansion of nuclear power some unions are beginning to be more critical. There is plenty of room for work changing union attitudes, particularly via the shop floor, and clear arguments as to the detrimental effect the nuclear programme has on trade union rights is crucial in this respect.

Maryanne Gordon and Julian Cohen
(with thanks to Dave Elliott)

From a speech made by Frank Chapple of the EEPTU, against an anti-nuclear motion debated at the 1977 Labour Party Conference.

'In this debate there are two major camps: there are those who support motions such as the one before you, and their position is that we have suffered enough from growth and it is time to call a halt to the technological threat. We should now stand still and reflect, even if we have to reduce our standard of living. That is their position — let us make no bones about it.

The other camp — the camp that the majority of the British trade union movement is in — says that we cannot stand still, let alone reduce our standards. We have no choice but to use growth to help us solve our problems. They pin their faith in the controlled use of technology. After all, did not the Aldermaston marchers call for the peaceful use of atomic energy?

Neither of these groups are a monopoly of environemntal or safety concern. Neither of their cases is without risk, and you have been told of the radioactive risk and the plutonium peril. But what of the peril to the world's growing millions if energy supplies run out? Death through cold, starvation, and wars of conquest for the available remaining resources. In the face of the facts that the anti-nuclear lobby have failed to refute, this picture is a very real risk indeed. In any event, if Conference carries this motion, we ought in all honesty to abandon all those resolutions which demand resources and growth.'

You're working at Windscale. Five years. Some have been there for twenty. Had a health and safety committee before they were even thought of in Parliament. The only work for miles around. Good pay. New technology spick and span, can't complain. Suddenly all the press are full of scare stories; radiation the new monster. *'What about the Environment?'* Unfamiliar pressure groups raising hell in the government bureaucracy. 'Close the industry. Close it down.' Then, 'radiation is not what you would call risky at the levels you work in' say all the scientific bodies. Nobody has died on the job, unlike some industries. And now the pressure threatens your job, your children's education, livelihood, and all for what?

It is by no means surprising that many workers and trade unionists are wary of 'environmental' objections to nuclear power, for the objections are always raised on technical grounds: calculated radioactivity presence in fish, extremely remote reactor failure predictions and so on.

Planning a technology is a human problem, and closing down the nuclear industry needs insight into the requirements of the workers in that industry. We should remember that the alternative energy sources must provide more jobs to bring relief from the bitter experience of the dole, with all the insecurity, anxiety for the children, and alienation which unemployment means.

Not only this, but imagine the pressure on any militant workers in the nuclear industry. Workers with known militant histories will not be employed in the industry (see back cover), and screening is continued during employment. Any workers who becomes politicised once in the industry will find his/her job under threat, while he or she is labelled as a 'security risk'. In other words, except by remaining inactive, it is difficult to see how a militant could survive very long in the industry.

In some cases the policy statements of unions can be disappointing, but it should be considered that these statements may be the result of their suspicion of the nuclear opposition. With no other authority to turn to, the trade union views often reflect the propaganda of the nuclear industry. It is to be hoped that as the grassroots become aware of what nuclear power will mean for them, trade union policy making bodies will look to other authorities.

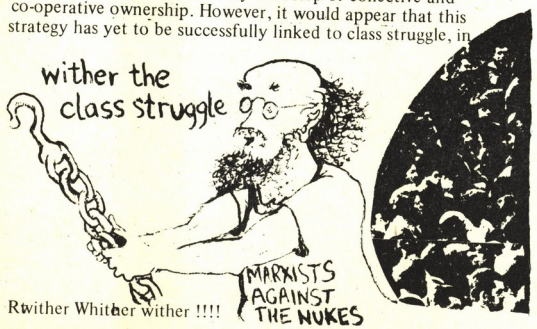
Splitting

This article is not simply a reiteration of the interminable wranglings as to whither nuclear energy. Rather, it takes as its starting point the view that much of the current debate is insufficiently locked into a clear political analysis, and for the left this is a reflection of an apparent unwillingness to grapple with the key issues around the role of science and technology in the transformation to socialism. It is argued that it is precisely because nuclear energy is a typical rather than unique example of high technology, even if a spectacular one, that the current debate is of such central importance.

Without wishing to subscribe to any form of technological determinism, the decisions to be taken over the next few years on the future policy towards the production of primary energy in Britain, have a significance that transcends the mere technologies involved. Nowhere is this more so than in the decisions on nuclear energy. For in many very real senses the forms and quantities of primary energy provide an important component in the means for the continuing viability of an economic and social system which in a number of important ways is in contradiction with the aims of socialism (see for example *Science for People* no 33). And conversely therefore, that the correct policy could form an important component in any strategies for the transformation to socialism.

It is regrettable therefore, that with only a few exceptions the left has been noticeable for its lack of any detailed analysis of and contributions to the current debates around nuclear energy policy. Paradoxically, it is possible that it is because of its importance that we have been so tardy in our contributions to the nuclear energy debate. (Together of course with a justifiable scepticism that so much of it has been for public relations purposes.) For the nuclear issue throws up general problems of the relationship between technology and the transition to socialism that would appear to have not been satisfactorily clarified. To what extent can we go along with the orthodox Marxist position, that socialism will represent the eventual outcome of the expansion of the capitalist means of production? Adherence to this analysis would imply support for any forms of primary energy source whose main function is that of serving an expansion in capital-intensive, labour-saving industrial capacity. Of course it is true to say that this will result in a decreasing requirement of labour power, which under a capitalist mode of production will result in structural unemployment, physically and mentally hazardous working conditions, and unacceptably low wages . . . But isn't this part of the dynamic process of class struggle towards the eventual demise of capitalism?

However, it is possibly a justifiable impatience with the time that this 'inevitable' process is taking, and the clear resilience of the capitalist beast to its demise, that has led many to argue the exact opposite. In other words nuclear energy, along with its compatible forms of high technology, should be opposed precisely because they represent an increasingly concentrated form of capitalist power, and its expression in the state apparatus which are resulting in an erosion of working class power, more hazardous working conditions and a corresponding increase in centralised social and political control. Does it not follow that we should go for low intensity, dispersed, and renewable sources of energy, such as those from direct utilisation of wind, wave, tide, solar power, linked to decentralised collectively controlled, and probably more labour intensive forms of industrial production? And that the transformation of social ownership should be achieved through the necessary first step of collective and co-operative ownership. However, it would appear that this strategy has yet to be successfully linked to class struggle, in anything but those areas abandoned by capitalism as unprofitable or unnecessary.

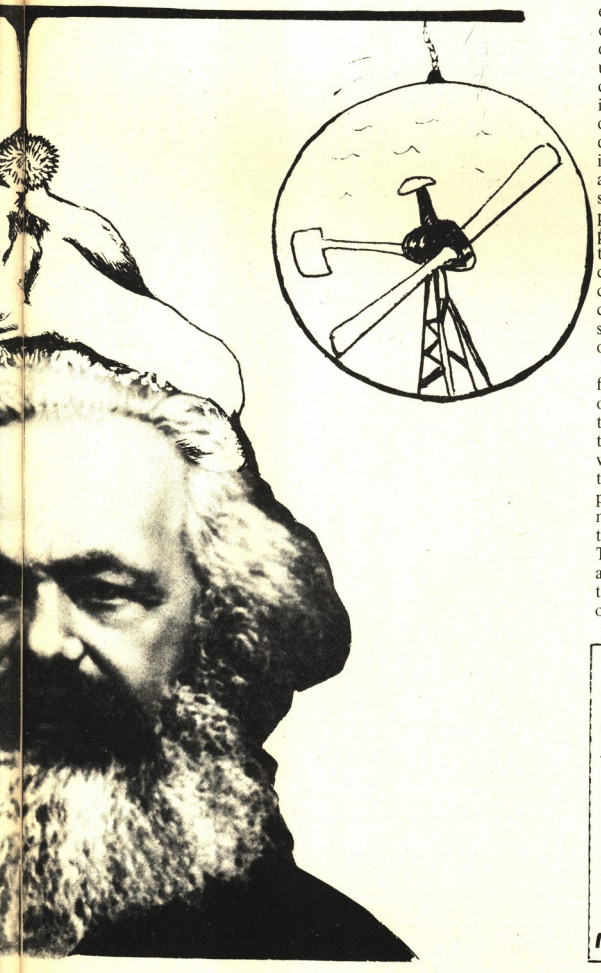


Rwither Whither wither !!!!

It is I believe our failure to confront the fundamental differences in these two positions that has led to many of the divisions on the left, and the apparently inconsistent and sometimes opportunistic forms of class struggle. Within the various attempts to politicise the nuclear debate one sees a variety of often conflicting attempts to bring nuclear energy within class struggle. Take for instance the issue of 'jobs'. To those whose implicit position can only be seen as the orthodox position, 'jobs'

Atoms?

have been linked to class struggle both in support and in opposition to nuclear energy. For on the one hand those large groups of workers in the heavy electrical industries, whose jobs are threatened by a lack of commitment to nuclear energy form part of the political struggle in favour of nuclear energy. This is particularly the case in France, where the communist-led trade unions have been actively supporting France's domestic nuclear programmes, and its vigorous international commercial manoeuvres to gain nuclear contracts abroad. In direct conflict, others have sought working class support in opposing nuclear

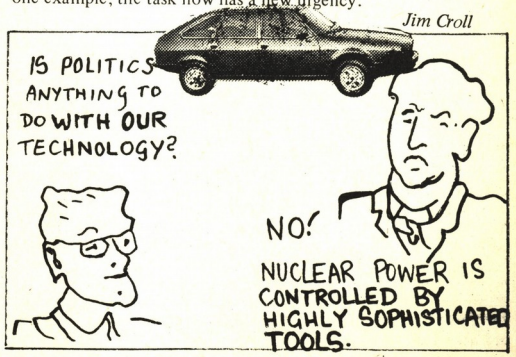


energy by appealing to the miners whose jobs and certainly political power will be threatened by a change in their traditional role as the major suppliers of primary energy. In neither case is the assumption of an expansion in the forces of production questioned. In contrast are the initiatives of S.E.R.A. to link the threat of unemployment in the heavy electrical industries to a diversification into various forms of alternative and socially-useful technologies; in much the same way as the Lucas Aerospace Shop Stewards' Committee Corporate Plan. Nevertheless it seems true to say that as yet these latter forms of political struggle are in important ways divergent from the dominant mode of class struggle as expressed through the labour movement, where a quantitative expansion of the means of production is the result if not the actual aim.

But even if the politics of nuclear power and its compatible, highly capitalised, energy-intensive technologies are as yet imprecisely located within class struggle and the socialist transition in the industrialised economics of Europe and North America, there are other and I believe more compelling reasons which must determine future energy policy; namely the international class struggle, or that between the rich and poor nations. Just as science and technology remain dominantly part of the apparatus for maintaining class relations within the industrialised countries, so are they employed to perpetuate and expand the existing international economic order. Almost universally the policy in the industrial developed countries is to expand the means of production, with a consequently greater demand for primary energy. Increased industrial output is dependent upon an expansion of markets in the industrially underdeveloped, poor regions. This policy is clearly in direct conflict with the objective interests of the poor, and is increasingly at odds with their own articulated policies for development. More and more their own strategies for development are seen in terms of weakening the existing international economic order. And from the rhetoric of the UN agencies to the realities of the liberation struggles they are seeing to it that this will eventually be ensured. Any industrial policy in Britain that is predicated on a growth of the forces of production, whether or not it is based upon a socialist transformation in the relations of production, must eventually come into conflict with these strategies for development. The challenge for the left in Britain, and elsewhere, is how our own class struggle can be redirected so that in working towards a socialist Britain, we are at once working towards the elimination of this, the major contradiction today.

From this perspective it is imperative that in gaining support from the working class movement the proper policy must be an opposition to the further expansion in nuclear technology. The task is to transform the optimistic but unrealistic assumption that 'people do not want more high technology and the alienation which it implies' into political reality. And to demonstrate that through qualitative transformation of the means and relations of production that an alternative is possible which necessitates neither a cataclysmic fall in the living standards of workers nor the continual quantitative expansion of the means of production. The task is by no means new. Nor is it clear how it can be achieved. But with the increasing and widespread availability of the means of mass destruction, of which nuclear weapons are but one example, the task now has a new urgency.

Jim Croll



Friends Upstairs

As the biggest noise in the UK anti-nuclear lobby, with the biggest slice of public attention (and funds), it's worth assessing to what extent FoE truly represent that movement.

On Tuesday October 3rd, Czech Conroy and Mike Flood, FoE energy campaigners, popped down to the BSSRS office and gave their views to *Science for People*. What follows is a summary of their comments peppered with a few of our own.

?????? QUESTIONS ?????? ASKED & NOT ASKED ??????
?????? ANSWERED & NOT ANSWERED ??????

Although well-intended, do campaigns through the media achieve anything?

Is parliament ever likely to give up its centralised control, with its token one-vote-once-every-five-years-on-all-issues democracy in favour of community and co-operative control?

Are conservationists and ecologists apolitical?

Can alternative technology be run non-exploitatively under capitalism?

Who owns the newspapers?

Is it naive of FoE to think that they can overcome the massive vested interests behind nuclear power whilst fighting on their terms?

Don't FoE worry that their objections are simply incorporated into the nuclear industry's final decisions without challenging the decision-making process.

And *without* challenging that process, and the gross power it represents, how do FoE think they are going to stop nuclear power?

How do FoE see themselves?

Just what campaigns are they involved in?

Will FoE give evidence to the Fast Breeder Reactor Enquiry?

How is the organisation run?

FoE was set up in 1970/1, as a pressure group with a membership but no local groups. Local groups cropped up spontaneously and one of their members argued to central FoE that they should see local groups as an integral part of the organisation. He came to London in 1974, as local groups' co-ordinator.

FoE Ltd. basically see local groups, who are often critical of the central organisation and its decisions, as complementary to themselves – local groups can raise national questions as local issues, whilst FoE in London campaign at the national level, although their mutual activities, such as lobbying MPs, converged more during the Windscale campaign. There are changes happening in this relationship – some local groups now have full-time staff and can hence campaign at national level (mainly on insulation) and a local groups' advisory committee may be set up next year.

How Decisions Are Made: A campaigning issue arises – eg Torness – FoE energy staff consult together and prepare a paper, which is put up for discussion at the next Poland Street staff meeting. (One afternoon every fortnight and once a year a two-day meeting, along with 10 or 12 local groups and board members.) The decisions that emerge are based on a general consensus rather than being formally adopted policies. In addition to this basic procedure, there are energy workshops every six months, which give an opportunity for local groups' input. There is also a board of directors, composed of "environmental activists and concerned academics", whose influence has tended to grow during the last two years. It's currently going through some changes, with a lot of members retiring, and FoE staff have put forward some prospective new members from a broad range of backgrounds.

Broadly Friends of the Earth Ltd. see themselves as a pressure group educating public opinion on environmental issues, and intervening in governmental or parliamentary machinery as lobbyists and as informers. Their main nuclear campaign in the past has been an energy campaign pushing coal and conservation and opposing the thermal and fast reactor programme.

To some extent the Windscale campaign distorted the otherwise sustained energy campaign by drinking resources and effort (Windscale cost FoE £50,000). Nevertheless, FoE consider that, in spite of having lost the inquiry, their involvement was a success in that it made Windscale a household name, refocussed attention on plutonium and proliferation, and upset any smooth and immediate transition to developing the Commercial Fast Breeder Reactor. As a group dedicated to achieving the 'visibility' of the issues, the nature of the success is clear. (Now you see it, now you don't.)

Thermal (ie Conventional) Nuclear Power Campaign Continues

The campaign opposing nuclear power will continue, but it will not focus solely on the danger to public health and to the environment, and will concentrate more attention on the economics of nuclear power and on the distorted energy requirement projections. Nevertheless, FoE still feel that collecting information on the safety of the nuclear industry is an integral part of their activities and *not*, as some have criticised, a wasteful exercise in which time and funds are expended in doing donkey work for the industry and for parliamentary committees.

FoE will also continue to call for reforms in the coal industry. They are lobbying for more efficient technology (in particular the fluidised bed combustion method still mysteriously shunned by the CEGB); switching coal use from electricity generation; efficient and safe mining, with a critical eye on open cast mining in particular. Conservation of energy, as achieved by home insulation on politically attractive job creation schemes, has been and will continue to be a major FoE interest.

Public Inquiries: Just a Pawn for Their Games?

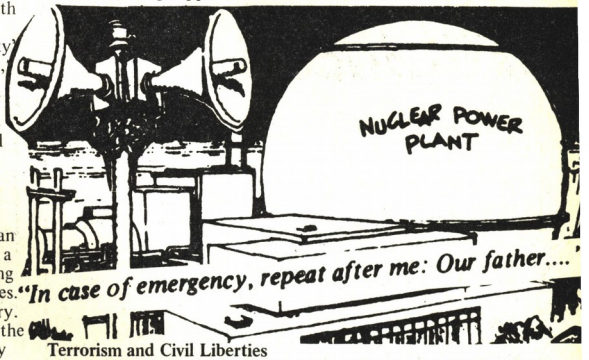
The Windscale inquiry needed immediate attention, and now the pressure is off, FoE intend to press for a delay on the Commercial Fast Breeder inquiry of up to five years (the industry themselves expect the inquiry within the next year or two), leaving time, energy and money for other activity.

It has been suggested that the Parker Report, which runs in the teeth of the weight of the evidence at the inquiry, proves that the inquiry system is merely a rubber stamping operation in which only various minor concessions will be made to protestors, and that FoE should now abandon this avenue. But FoE, although sceptical, believe that inquiries are part of the decision-making process and that we should use them when appropriate. They also believe that we should welcome moves towards greater *parliamentary* debate on nuclear issues (away from Government department decisions), as a move towards democratisation. They believe that the number of areas of official lobbying are numerous and that they should *all* be tried before risking direct action. (One might question the usefulness of struggling endlessly with advisory bodies like the Royal Commission on Environmental Pollution who have no teeth.)

Grassrooting vs National Lobbying

Friends of the Earth Ltd will continue to be the national lobbying branch while grassroots work will largely continue to be done by local groups. Large scale grassrooting with trade unions as carried out by FoE Australia, for example, is not envisaged, mainly because of the lower pitch of the UK anti-nuclear movement and the antagonism of the British trade unions.

The blatant hostility of trade unions to the environment movement stems from two sources, FoE feel. One is the hangover from the pre-1970 actions, which were mainly conducted by middle-class conservationists opposing factory building on grounds of loss of amenity, alienating the workers who were looking for an increase in employment. The other is identification of nuclear power as a source of new jobs. To redress the balance in their activities FoE intend to do more work on drawing attention to *job-intensive* alternative energy production, and to start canvassing support in local trades councils.



Terrorism and Civil Liberties

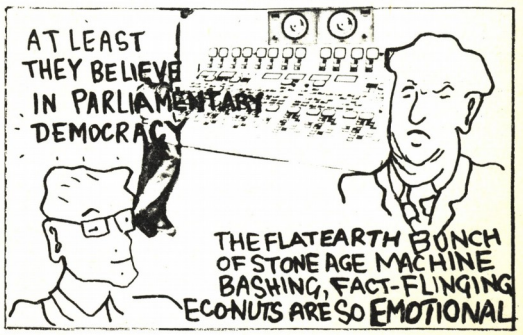
The risk of fissile material being diverted by malicious persons and terrorists was an issue originally introduced and publicised by FoE, along with the question of proliferation. They saw this as broadening the scope of their opposition, and felt that these risks were more accessible to the public than more technical aspects. They hope, in the future, to focus less on hypothetical descriptions of the losses of civil liberties which a plutonium economy would mean (as documented in their *Nuclear Prospects*) and more on the real emergence of worldwide nuclear repression.

Rocking the Boat

FoE remain *very* wary of direct action, and will continue to act as lobbyists and educators of public opinion at large. While not opposing groups who engage in direct action, they feel that such groups are in danger of antagonising local opinion (in the case of occupations) and risk general bad publicity for an action which may not contribute to stopping the nuclear power programme.

Dai Rose

Garyanne Mordon



NUCLEAR TECHNOLOGY FOR BEGINNERS

(If you are utterly bored see caution at end.)

Uranium and Plutonium are the basic fuels that drive the nuclear power reactors. Uranium is mined in Canada, USA, Gabon, Australia and South Africa. As the ore comes from the mines it is processed into uranium oxide at the pit head. This "yellowcake" is then shipped by the tonne to Europe or other countries that operate "enrichment" factories.

The enrichment plant aims to separate two fractions of uranium, U-235 and U-238, which, although they are visually and chemically identical, have different nuclei in the atoms, giving them different explosive properties. Before following the fuel through the rest of the nuclear industry, a few basics.

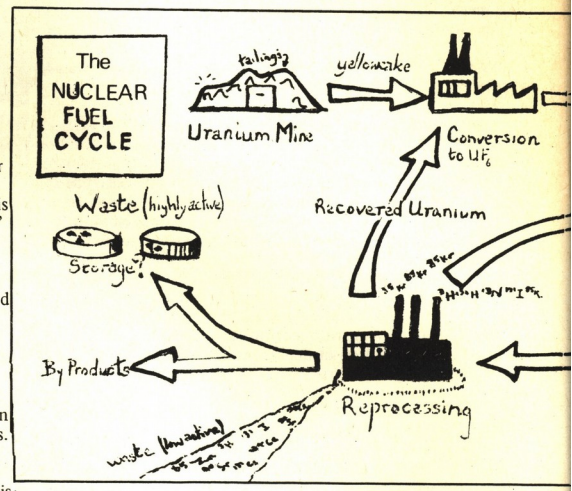
Uranium-235 is readily explosive when slow neutrons drift close enough to be captured by the binding force of the uranium-235 nuclei. When this "capture" happens energy is given out. This energy pushes particles of the nucleus into two clusters. The clusters vibrate and go so far apart against the attractive binding force, that ordinary electric repulsion takes over and sends them zipping further apart very fast and energetically. (This energy appears as heat when the fragments collide with surrounding matter.) This process is called "fission". Uranium-238 is not explosive (fissile) at all in a stream of slow neutrons, *but* when it captures a neutron it is converted into plutonium-239, which *is* fissile. Plutonium is not found in nature at all, but is a man-made product.

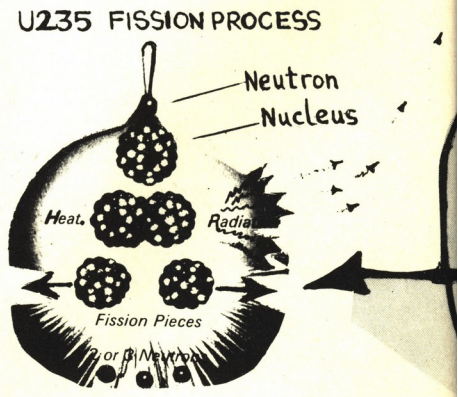
Back to the enrichment factory. The problem is that the fissile U-235 is very difficult to separate from U-238, and worse (from the industry's point of view) it makes up only 0.7% of all uranium, the rest is U-238. The enrichment plant aims to filter off U-238, with partial success, so that the proportion of U-235 is so high (2 or 3%) that the "enriched" mixture is fissile enough for reactors (it has to be above 20% for bombs). The "filtering" is done by making uranium oxide into a uranium gas for which the U-235 part of the gas will diffuse across a membrane slightly better than U-238. When the 2 or 3% enrichment is achieved the uranium gas is reconverted to the solid oxide, put into clay pellets and stuffed down a tough, shiny, highly machined tube (a fuel-rod). This last part is called, suprisingly, "fuel fabrication" and may be done in a separate factory, such as the Springfields Works of British Nuclear Fuels Ltd. near Preston, Lancashire.

Bundles of these fuel-rods are transported to reactor sites and end up being inserted into the large cylindrical cores by huge loading machines. The reactors (Magnox type) stand 24 1/3 feet high and are 90½ feet in diameter. Remembering that you need slow neutrons to make the U-235 in the pellets explode, where do the slow neutrons come from? When a reactor is started up the operators rely on a few spurious neutrons that are always knocking about in the core (they come from the rare, but noticeable spontaneous blowing apart of a single U-235 nucleus). Some of these are bound to have slowed down, and so the first U-235 captures a neutron and undergoes fission. How does the reaction go from there?

Now in a fission you don't only get energetic fragments flying off, but also some very fast neutrons (sometimes two, sometimes three neutrons) come out. If you slow these two or three down they each set off two or three other fissions, each of these sets off two or three further fissions which *each* release further neutrons. So now there are between eight and twenty-seven neutrons causing fissions simultaneously, and they're building up very rapidly. If you're not careful the process will carry on and the number of fissions will build up in a fraction of a second to an explosive amount.

Two points: 1) in an ordinary reactor you try and slow the neutrons down between fissions to give them better chance of being captured; 2) in a fast reactor you make sure there's enough neutrons lost between release one moment in fission and capture the moment later by U-235 nuclei for the next fission. The rapidly expanding number of fissions will then level-off and you have a "controlled fission". So that's how a reactor works –



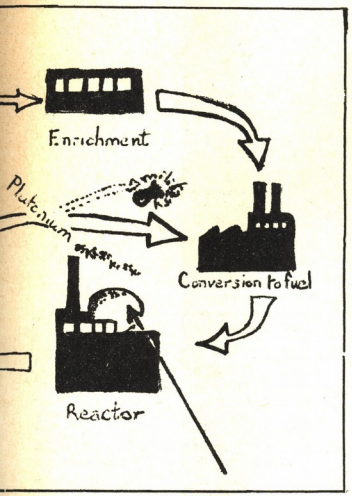


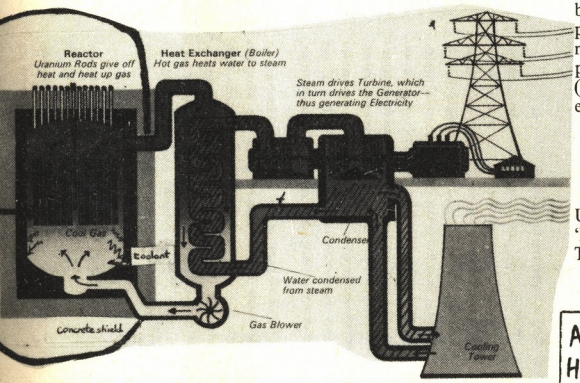
simply lose or absorb a few neutrons in an otherwise runaway reaction. The heat is generated by the few hundred billion collisions of fission fragments that happen each second. Neutron absorbers, like carbon rods, are called "moderators".

The heat generated in the reactor core is carried away by the "coolant" (usually one of the following: water, heavy water, helium, carbon dioxide, or for the "fast reactor" – sodium). The coolant gives up its heat to water to raise steam which drives turbines which generate electricity which powers your building – it's the round "plum pudding" dome which is just reinforced concrete containers built to withstand mild explosions of the reactor core that might conceivably happen. Other possible "nasties" are runaway reactions which could cause a melt-down

of the core and a release of radioactivity.

End of story? No – the fuel gets used up and has to be replaced, but this is the ugly operation. The fuel rods are choc-a-bloc full of highly radioactive gases, liquids and solids formed by the fission fragments of each U-235 fission. Also there are burst clay pellets, occasional fuel-rod fractures. Important too is the U-238, some of which has been converted into fissile Plutonium-239, which the industry don't like to throw away, and the military covet. The next stage of operations is "reprocessing" which aims to separate off the nasty fission products, collect the unused Uranium-235, the plentiful Uranium-238 and the Plutonium-239. "Windscale" is a reprocessing plant.





Reprocessing: find a long assembly line. Chop up one old fuel-rod (after letting its radioactivity die down a bit, under a shield of pond water). Slosh in some acid (mind the radioactive fumes), swill out the uranium and plutonium together then separate plutonium. Send the uranium back to the enrichment plant and hang on to the plutonium for the fast reactor programme (store carefully to avoid a spontaneous nuclear reactor). Collect all the gases and liquid residues, and the solid bits not dissolved in acid. Care – the radioactivity is still lethal. Bury the solid. Concentrate the worst of radioactivity from the liquid, and wash most of the activity out of the gas. Keep the radioactive concentrate in a vat for thirty years (trying to avoid leaks), and try *very hard* to perfect a permanent method of storage. (You could try burying it in glass blocks and seeing whether, over a million or so years, it leaks back into the environment.) You now only have mildly radioactive liquids and gases left. Simply release into the air and tip into the sea in quantities calculated to keep deaths below the national average for smoking. The reprocessing plant at Windscale handles an intake of 700 tonnes of waste per year and is going to double that capacity following British Nuclear Fuels Ltd's victory over the objectors at the recent enquiry.

The fast breeder reactor

Using slow neutrons to give a better chance of fission, with the dispersed Uranium-235 is not really necessary if you have the fuel very concetrated like the Plutonium-239 that comes from reprocessing is. So as the Oxide, Plutonium is used in a fast reactor which does not have a 'moderator' to slow the neutrons down, because the reaction can be sustained without it. The heat is generated far more intensely, that's why Sodium, as the liquid metal, has to be used as a coolant, in spite of its disadvantage as a highly explosive element when in contact with water. The fast reactor can be surrounded by a blanket of Uranium-238, which is converted into plutonium by fast neutrons as well as slow ones. So the non-fissile U-238 becomes fissile Plutonium, fuel is 'bred'. The reactor in this form is called a fast breeder reactor. At Dounreay in the Northern tip of Scotland, there is a prototype fast breeder reactor and plans to build a commercial fast breeder reactor.

Caution:

Scientific explanations are dangerous! All I have done in the above article is talk about simple observations concerning nuclear power generation in the language of Nuclear Engineers. Their perspective, vocabulary and microscopic theories are only useful for inter-relating thousands of observations. We are only interested in a few macroscopic facts (you would have moaned if I hadn't put you through the jargon!): if you stick slightly enriched uranium in rods into a reactor with a carbon moderator you get masses of heat (a 'thermal' reactor); if you stick plutonium or enriched uranium into a reactor you get masses of heat without carbon moderators (a 'fast' reactor); putting a blanket of uranium around a fast reactor you get usable plutonium (a 'fast breeder' reactor). The spent fuel is highly radioactive (i.e. deadly) and has some useful uranium and plutonium left in, which is separated from the waste (reprocessing). The waste is hopefully kept isolated from the environment until it's safe (a million years). That's all.

Dai Rose

Useful, detailed but readable summaries (see Critical reading list):
'Nuclear Power' Walt. Patterson,
The Flowers Report

and what if we don't go nuclear?

We felt we couldn't produce an issue on nuclear power without mentioning alternative ways of supplying energy needs and reckoned a glossary of the different sources of energy and methods of conserving what we already produce would suffice. But we'd also like to throw in a few comments about "alternative energy".

First of all, we'd like to challenge the image of the monolithic industrial world blundering on whilst in the wilds of Wales a tribe of keen alternative types run a village on a windmill, hoping to hell it'll catch on. Any alternative energy scheme that is not firmly rooted in the skills and desires of unbourgeois people living and working in the real world won't change much.

One of the problems in trying to knock up a broader picture of how to supply our energy needs without nuclear power is to find out just what those needs are and will be in the future. When you see projections of how much energy we need and what technologies will fulfil which quota, all neatly arranged in numbers, how on earth do we know what these figures are based on – how much energy to produce what for who? Will power stations carry on wafting about 70% of the energy they produce into the air? Will 'we' always 'need' 7 BILLION poundsworth or more of military paraphernalia? Was the author of these figures working on the assumption that we 'need' to produce deodorants, plastic foodwrapping, electric carving knives etc. in ever-increasing quantities because growth equals a better life for all? (Never mind what you're growing and what conditions the growers have to work in.) You can bet your life that your average statistic-juggler is thinking of energy in terms of another *thing*, another commodity to be bought and sold, an investment to make a profit, not as a means to human beings creating what they need to live joyfully.

Even where alternative energy visionaries are working with a completely different set of values, there's still the burning question of how they envisage we can begin to challenge the giant empire of bosses who are hellbent on nuclear power. And it's no good believing that the alternative technologies in themselves will bring about the miraculous transformation of our society into one where the vital decisions about human fundamentals like employment and production are shared equally by all people concerned, because a large proportion of this following list could quite comfortably be incorporated into the unjust centralised system of decision-making we already have. It's not hard to imagine, for example, solar power capitalist-style – in fact, it doesn't need to be imagined as it's already in the making – giant solar cells will be orbiting in space, while huge unsightly central solar-collecting stations, and solar units for those that can afford them, are being churned out on those old familar assembly lines.

That's not to say that some solid work isn't being done on future energy scenarios – for example by the Centre for Alternative Technology, Machynllern, Powys, Wales, and by the Science Policy Research Unit at Sussex University, who've got the figures to show that there will be no energy gap. And it's certainly not to say that all those working in the energy field are as horribly ignorant as the Department of Energy and the Energy Commission.

> *"Paul McClory is a former technical journalist and marketing man who can hardly be described as the popular image of the eco-nut. Short-haired, besuited and unashamedly capitalist, he is, however, one of the founders of a particularly down-to-earth branch of the alternative energy industry.*
>
> *"His organisation, the Natural Energy Centre, aims to make a profit out of providing good, basic information and hardware on the renewable energy sources available to industry, commerce and the private individual."*
>
> *Guardian June 7 1978*

ALTERNATIVES TO NUCLEAR FISSION POWER IN THE UK

Non-renewable resources

Fossil fuels: Coal. The UK has a large reserve of coal, and with new mining and combustion technology (fluidised bed, for example) this can be a safe and efficient resource which can be democratically acceptable while maintaining employment.

Oil is drying up, and is probably best conserved as a feedstock for the chemical industry, rather than squandered in propelling fast cars.

Gas is plentiful, and should last until the end of the century, if we moderate our current high consumption.

Refuse burning: every year, the UK's refuse has a thermal equivalent of all the nuclear electricity generated in 1974. Paris has an efficient system of district heating based on refuse combustion, and HM Government's Warren Springs Laboratory at Stevenage has calculated that this source might supply one-third of our space heating requirements.

Fusion: The JET (Joint European Torus) project is based at Culham. It is a massive capital gulping venture, which is run under the direction of the UKAEA. A torus is a magnetic coil within which lithium and deuterium are heated up until they can fuse and release energy as more heat. At the moment, the only places where this process has taken place are in the sun, and in the hydrogen bomb. Already energy chiefs such as Sir Francis Tombs of the CEGB have promised us that this is Britain's future in energy generation . . . that it will be unlimited, cheap, safe, and all the other familiar stories. Whether or not it ever will be a serious economic proposition to create a fireball with the heat of the sun and throw water at it to make steam, to turn turbines to make electricity to drive our electric toothbrushes, fusion carries very real dangers of thermal pollution, and will never be accessible as a democratic form of energy generation, unless somebody develops a backyard laser fusion kit.

Renewable energy resources

Wave power: huge 50,000 tonne 'nodding ducks on the Scottish coast could generate electricity with their relative motion. A substantial advantage of a wave system is that the energy is in full supply in winter when it is most needed. However, though the scheme would provide employment, of a not too technical nature, it is not particularly accessible as a democratic method of generation (see *Undercurrents* 27).

Tidal power: you build a barrage across an estuary and let the outgoing and incoming tide turn generators. The Severn Estuary scheme is being researched, and is costed at between £1 and £7 billion for a one-off job with no development phase. It would provide energy all the year round, meeting up to 10% of our energy requirements. It would make construction jobs, would be potentially democratic, though some have had doubts about the environmental effects of the scheme.

Hydro-electric power: must we flood more valleys? But small scale stream trapping is worth trying for those who have a brook handy.

Solar power: There are many schemes and methods of converting the sun's energy to electricity, though none are viable for national grid purposes. Used for its heat value, solar energy can take the edge off domestic cold water, and cut down energy demand by a significant per cent. However, the major problem with any solar related technology in this country is that there is no sun when you most need the heat. Among the storage technologies to combat the erratic supply are the use of batteries, and also using solar generated electricity for electrolysis of water to provide burnable hydrogen fuel. While research in the UK is poorly financed, the USA are developing a project to beam microwaves down from a huge orbiting solar panel, and the population at large would have no direct control whatsoever over the use and supply of energy from this kind of scheme.

Wind power: A big windmill will contribute electricity, but could never be a major supplier on a national scale, at best a few percent a year. A windmill is as ugly as a pylon (depending on your point of view), and they are also noisy! However, windmill power would be a good employer, safe, and potentially democratic.

Geothermal power is obtained by harnessing heat from hot rocks in the earth's crust. This is an important energy supplier in Iceland, but in Britain these geological hot spots are relatively rare. However, heat pumps will deliver heat energy from the ground, gathering three times more energy than they consume. These could make a small but significant contribution to user efficiency of electrical heat, and would be potentially democratic.

Bio-mass: Photosynthesis in plants is a natural and relatively efficient storage system for solar energy. Cultivation of marginal lands for fuel giving vegetation is the aim of bio-mass methods. It would require conventional biochemical engineering, and could provide a democratically accessible form of energy collection, with the radicalisation of science and agriculture.

Social and economic

Depression in materialism: simply, if there is a sustained lack of demand for commodities and services, generally or only those of an energy intensive nature, there will be a glut of energy, so that nuclear electricity will just not be required.

Conservation. The scale and variety of conservation measures possible make this an essentially social/economic decision. Industrially, just tinkering with the processes developed in the days of cheap energy can save up to 40% of our current energy consumption. Redesign, and changes in the pattern of consumption (see introduction) will provide further economies. Domestic insulation job creation schemes are a valuable approach, providing that they don't scab on traditional jobs, or encourage the use of dangerous materials. Conservation measures also include resource efficient transport planning, the use of sludge gas from electricity generation as process heat for greenhouses for example.

This is only a brief glance at a broad answer in which a number of groups are deeply involved: NIN, SERA, FoE and others.

Well, these are the possibilities for a non-nuclear future and in the face of all the doubts, we are sure that in a society in which all people genuinely have the power to control their own lives, these technologies will play an extremely important part.

P.S. Present research funding on alternatives is £3 million, while nuclear power gets £133 million per annum.

Garyanne Mordon
+ Dai Rose + Jonathon etc.

Helpful notes for the uninitiated

'Democratically accessible' refers to national technologies that can be brought under worker control or local and community technologies that can be brought under district or co-operative control.

AT is a common abbreviation for *alternative technology.*

Useful reference works

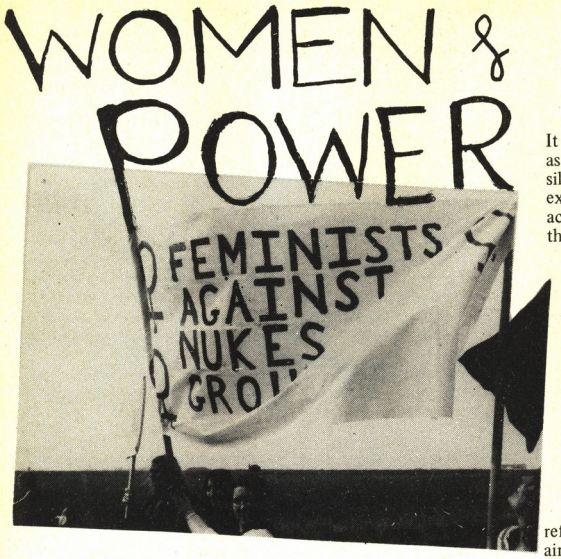
An Alternative Energy Strategy from the Centre for Alternative Technology, Machynlleth, Powys, Wales.
Energy: a planned policy from NALGO, 34 Gloucester Gardens, London W2.
Undercurrents 27 and 30, from 27 Clerkenwell Close, London EC1R 0AT.

A selection of groups interested in alternative technology but not in the anti-nuclear power directory are:

New Age Access, PO Box 4, Heysham, Northumberland.

EGIS Environmental Information Service, North Lodge, Elswick Road Cemetery, Newcastle on Tyne, NE4 8DL.

NATTA c/o Dave Elliott, Faculty of Technology, Open University, Milton Keynes, Bucks.



WHY MOTHER NATURE IS A FEMINIST

Feminists in the anti-nuclear movement do not hesitate to draw parallels between MAN's exploitation of nature and MAN's exploitation of women. Both relationships express the patriarchal principles of male supremacy and dominance. The arrogance with which technology abuses the earth is the same arrogance which confronts women everywhere. Man regards himself the master of nature and the rightful master of women. The idea of the rape of Nature is more than just a metaphor. Patriarchal and capitalist ethics which make exploitation desirable and profitable form the base of our society.

> "Exploitation of blacks by whites, of workers by bosses, of individuals by the State, of women by men and of the earth by humans, must therefore be seen as linked in common struggle."[1]

Feminists cannot separate demands for a more sane, harmonious environment from demands for non-exploitative, harmonious social and political relationships. To isolate the nuclear issue at the expense of everything else is an act of suicide. To persist in thinking that women's struggles are irrelevant rather than integral to the anti-nuclear struggle is to ignore the reality that any truly liberated society depends on the liberation of all its people.

A man without nuclear hardware may be more liberated but is a woman without nuclear hardware any less oppressed? Who does the nuclear laundry? Who empties the nuclear dustbin?

Some facts of women's oppression are made clear in our relationship to nuclear power and the anti-nuclear movement. Most women feel that nuclear power is an issue that doesn't concern them. This feeling derives from the common assumption made by men and internalised by women, with a little help from our friend, sexist education, that women are incapable of understanding mechanical, scientific and technical ideas. Ruth Elliott in *Undercurrents* No. 29, argues that women lost control over technology and hence understanding of it when the focus of production shifted from the home to the factory. Although at first women and children worked in the factories with men, liberal forces at work in the society enforced the return to the home for women and children. The factory and not the home was now the centre of technological innovation and production, and women had no direct relationship to it. The alienation of women from science and technology has continued to such an extent that we are abused by it and denied access to information that directly concerns us and our bodies.

> "Women are forbidden knowledge and control of the technology that would place their own biological processes in their own hands (contraception, abortion, gynaecology). Thus the structures of patriarchal consciousness that destroy the harmony of nature are expressed symbolically and socially in the repression of women."[2]

It is hardly surprising that women feel alienated from technology, as many interwoven conspiracies systematically enforce women's silence in the scientific world. Technology has become the exclusive property of men so that when some exceptional women actually do make it into the established scientific community they leave because of its very *maleness*.

> "The rules are defined by men for men and are based on brotherhood and male group bonds . . .
>
> I know that I can only feel free to express my ideas in an environment that is not intimidating and judgemental, in which I know my anxieties and doubts can be freely acknowledged, and where mutual support is the key and not individual performance. Such openness is the anathema of the scientific world I entered, where emotional dishonesty is blatant under guises of reason, objectivity and abstractions, and where the social reasons for doing science are lost among the emotional needs of western men to achieve, perform and acquire status in the eyes of their own sex."[3]

The exclusion and under-representation of women in science is reflected in political arenas that do not relate to or support the aims of the Women's Movement. There is nothing inherently apolitical about women, rather there are concrete conditions behind their invisibility in public. In terms of the anti-nuclear movement which is a political movement, though some within it would dispute this, the following points contribute to the felt under-representation of women and feminists: 1) the above mentioned alienation from technology and science that women feel; 2) the real constraints upon a woman's time and energy especially if she is in a traditional nuclear family set-up, and 3) the lack of spoken and active support for feminism.

In the first instance, our alienation from technology entails a different reaction to it, something other than a cool, calculated presentation of facts. Women are told not to be emotional and are made to feel that unless we know every single detailed argument against nuclear power we are not really worth much to the movement. Some of us think that to do battle with technical arguments is to do battle on male terms; and that additional points of contact that women make, for example, appealing to human feelings about the issue, are rarely commended. I don't wish to imply that women are emotional or irrational. We have a healthy respect for emotions not to the injury of facts, but with a reverence for the way in which feelings underlie the assimilation and interpretation of facts.

Secondly the constraints upon a woman's time and energy are part of her oppression. It is inevitable that the nuclear family set-up spawns the attitude that nuclear power is an abstract threat bearing no relation to everyday life. The world that brings us nuclear power and the world of domesticity, are poles apart that are only brought together over a sales counter where electrical appliances marry the two. And if you think that the days of the sixties are over, the times when women's political action was confined to making the tea in the backroom while men made the decisions in the front, think again! Who do you know who would go to meetings, demonstrations, have more time to get involved, if she had less to do at home? Offer to do some of the work, to look after the children, because it is not enough for men to do childcare on the day of a large event. The situation requires that men do responsible childcare all the time so that women have the opportunity to participate in the important decision making and strategic questioning that precedes the one day action.

And now to the under-representation of feminists in the anti-nuclear movement. The feminist movement involving the commitment to take control of our own lives, to fight for self-determination, to eradicate the root causes of all oppressions, to put the human over and above the material and to work collectively from a decentralised base, is founded on principles that to all appearances are compatible with any anti-nuclear and alternative movements. However those principles upheld by women specifically imply a second set of commitments from

men. We demand profound changes of individual men as well as patriarchal institutions. We are working to undermine male power in all its forms. Feminists in the anti-nuclear movement who are accused of being divisive in our efforts to organize autonomously and because we 'alienate' men and hurt men, would like to point out that women are ritually hurt and alienated by patriarchal society and that men can be extremely divisive as they manipulate, dominate and interrupt meetings. No, we are not divisive but yes, we are a threat! We can not work alongside men who are not willing to make the second set of commitments, men who will not attempt to rid themselves of their sexism, inherited from the patriarchy and enforced by capitalism. How can feminists believe that men in the anti-nuclear and alternative movements are fighting with the same vision for the future when their outrage at the loss of civil liberties that the nuclear state brings, reflects gross unawareness and insensitivity to women, as many of those mourned lost rights *have never belonged to women women!*

> "Fraser (Australian PM) has just called out the army for security to safeguard the right to safely walk the streets! He is protecting politicians. When has it ever been safe for women to walk the streets, to stay at home without being attacked by a stranger or a husband?"[4]

The liberties that men enjoy every day should be given to all people. Perhaps the threat of nuclear power is the first personal affront that white middle class males have felt. We demand that they take into account women's oppression, and their role in it; so that they might fully understand the implications of women feeling personally threatened all the time!

After the melt-down?

Crucial to a feminist perspective is the idea that the way we work, our means, not only reflect but determine our end. In our efforts at social change we need to incorporate new systems of organisation that closely approximate our desired society. The Women's Movement over the past few years has led the way in creating democratic, flexible methods of organisation. Some of these innovations include working in small groups rather than in large ones, the rotation of tasks such as the roles of chairperson, treasurer etc, taking into account the vital role that feelings play in influencing our decisions and actions, the concept of self-help and education groups and of collective childcare and income sharing. The alternative and anti-nuclear movements are also utilising some of these methods now but I contend that it is not new structures alone that will eliminate old oppressive relationships. Alternative technology provides the conditions to restore the relationship between home and production and to reduce the sexual division of labour to a minimum. But these changes and readjustments won't just happen naturally after 'The Melt-Down'. It is the way we organize now for the future that determines our relationships in the future. It is not the structural form of an affinity group (the organisational unit being chosen by many in the anti-nuclear movement who are committed to Non-Violent Direct Action), that provides a greater democracy than hierarchical structures. It is the personal commitment made by each person in the group, to challenge sexism, to work collectively, that ensures a less oppressive method of organisation.

> "Before there can be democratic organisation there must first be a democratic mentality – a way of thinking about the relations among men (sic) which stresses equality of being and which strives incessantly towards the widest possible sharing of responsibility and participation in the common life."[5]

A totally liberated non-nuclear society depends on the willingness to support oppressed people's liberation NOW, as much as upon the efforts we are making to wield the power of a broad based movement against the state.

Men working towards a non-nuclear society need to *listen* to women, to work on their own sexism and to offer practical support to women. It is crucial that women's attempts to develop a specifically feminist analysis of nuclear power, that our organizations and our actions are considered fundamental in the struggle against the nuclear nightmare, because,

> "The nuclear society would not only mean an even greater oppression of women than we already experience, but it would disallow the possibility of any massive social change which would accompany attainment of the feminist goals of self-determination and liberation for all."[6]

N.B. Patriarchy is a society in which men as a group hold power over women.

Sheryl Crown

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5 John H. Scharr, 'Equality of Opportunity and Beyond' in *Contemporary Political Theory*, edited by Crespigny and Wertheimer. p.145.
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Undercurrents No. 29 August/September 1978
Shrew. Feminism and Nonviolence. Summer 1978.
Many thanks.

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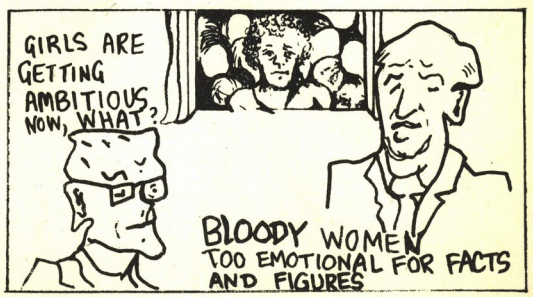


1976

On 9 December 1976 at Trawsfynydd Nuclear Power Station a dead cat was found in a pipe trench of the pump room. Radioactivity did not contribute to the cause of death, but 'measures to prevent any similar incident have been taken by staff'(1).

15 December, the Secretary of State for Energy announced detectable levels of tritium on the beach at Windscale.

On the 14 December a defect in the cladding of a fuel element in the AGR at Windscale activated alarms. *Remedial operations involved a discharge of 100 curies of xenon, krypton and argon through the chimney stack.* Discharge was described as 'insignificant'.

An empty flask, on its return to Wylfa Nuclear Power Station on about 20 December, was found to be contaminated over the permitted operating level. Some of the workers' clothing was contaminated, but this was described as 'insignificant'. Reporting on this incident the Health and Safety Executive said that although flasks are sometimes contaminated 'in excess of the permitted operating limits, they do not present a significant radiological hazard'.

During removal of effluent pipework from the diffusion plant at Capenhurst on 24 December, several grammes of a compound containing 7% enriched uranium were spilled. After cleaning up, it was decided that nobody had received a 'significant' intake.

1977

During a routine glove change on 12 January 1977 at Windscale Works, a plutonium in air alarm sounded, and the 3 men present were found to be contaminated. A whole body monitor and biological samples produced the conclusion that their intake had been 'minimal'.

On the 20 January at Windscale Works, a process worker was found to have a finger wound contaminated with between 5% and 12% of the maximum permissible body burden. He was withdrawn from active area working, and a 'small' bodily uptake of plutonium was detected. As a result of this incident, operating procedures were revised.

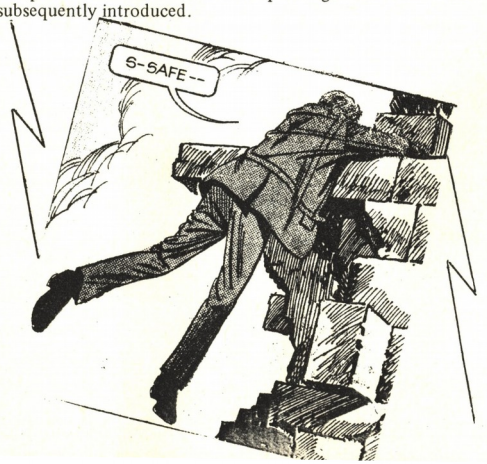
The Current Health and Safety Debate

The nuclear industry in the UK is proud of its safety record, and with some justification. With the exception of the fire at Windscale in 1957, there have been as yet no major accidents. But despite the attention that has been paid to health and safety there have been regular minor incidents: in 1973 for example, 35 workers at Windscale were accidentally exposed to radioactive material although, apparently, the doses they received were within the permitted range.

Contamination is a constant hazard, particularly in reprocessing operations and minor accidents are frequent. However it is usually difficult to demonstrate an irrefutable link between working in the nuclear industry and the subsequent development of disease. Many years may pass before cancers develop and sample sizes are inevitably small. Not surprisingly, controversy rages amongst the experts in the field. For example, Dr Alice Stewart has claimed that cancer risks may have been underestimated as much as 20 times.†

On the other hand, a study by the National Radiological Protection Board (NRPB – 54), based on the medical records of employees at Windscale, could not establish any causal link between deaths and exposure to radiation. However, this study did not cover workers who had left Windscale for other jobs and has met with some criticism.* A much more comprehensive – and necessarily lengthy – study is underway. So it may be some years (10 to 20) before this issue can be fully resolved.

In the meantime, the GMWU has taken BNFL to court in regard to the deaths, allegedly resulting from contamination, of two of its members working at Windscale. Their widows were eventually awarded £30,000 compensation. An automatic compensation scheme – like that operating in the NCB – was subsequently introduced.



Workers outside the industry may also be affected. For example, workers involved in transporting nuclear waste. In December 1976, radioactive contamination was found on an empty flask used to transport nuclear fuel rods by rail between Windscale and the Wylfa power station. BNFL commented that 'while above the accepted level they were still very low and presented no hazard to those handling the flasks or to the public.'

Similar assurances followed the derailment of a container en route to Windscale from the docks at Barrow-in-Furness. In November 1975 the Confederation of Shipbuilding and Engineering Unions (CSEU) attempted to ban the handling of nuclear waste coming in to Barrow from Japan and elsewhere. The CSEU wanted information on the likely effects of an accident to a waste container and as to whether armed guards would be posted to Barrow docks and on the trains. Representations from the GMWU, which covers crane operators at the dock, and which also has members working at the Windscale plant, led to the demise of the ban.

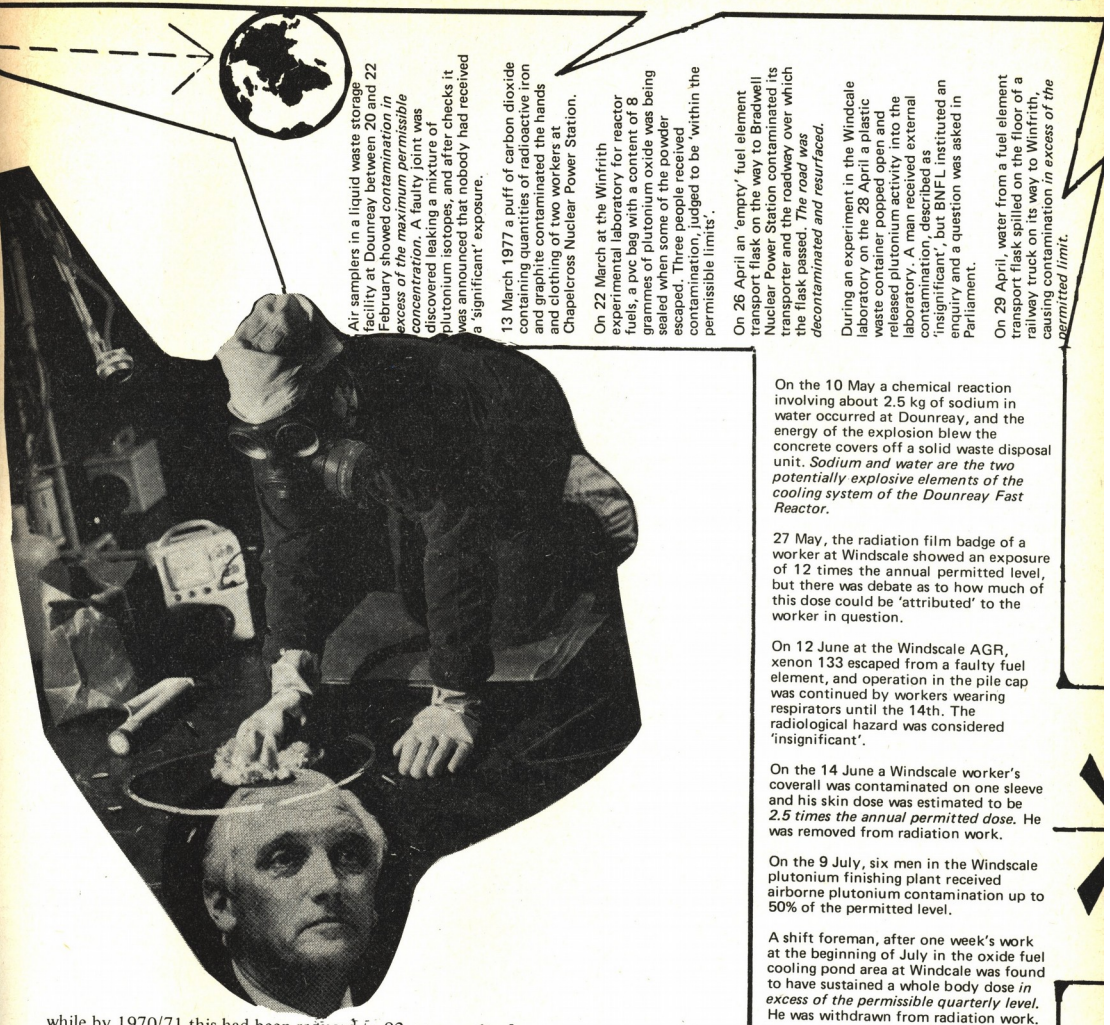
Ugly comparisons

It is of course a fact that the health and safety record of most of the other energy industries is far worse than that of the nuclear industry, at least so far. But care must be taken in making comparisons. Obviously coal-mining is more dangerous than working in a power station. But we have to add into the equation the accident and death rate associated with the mining of uranium – around 50% of which comes from South African mines – which exposes workers to radioactive radon gas. We also have to remember that all the energy scenarios currently under discussion, *including* those with a large nuclear component, assume an *increased* contribution from coal: for one thing, we would need energy to build nuclear power plants. So opting for nuclear energy does *not* mean that fewer miners will be killed.

Charles Kerr writing in the Australian magazine *New Doctor* has attempted to make a comprehensive comparison over the complete fuel cycle, from mining, through transport, processing, use, reprocessing and waste disposal of uranium and coal. His estimates for the likely incidence of casualties from construction, servicing, supplying and operating one 1,000MW nuclear reactor, compared with an equivalent 1,000MW coal fired station are 0.746100 and 1.2 to 25 respectively, these figures including the transport casualties and delayed deaths in both cases. So at the top end of the range, the nuclear fuel cycle may lead to four times more casualties than the coal cycle.

Obviously, such figures should be treated with caution: rival analyses have produced very different results*, and the fact remains that deaths in the coal mining industry in the UK continue to be in double figures annually.

But they can be reduced, if mining technology is developed. For example 618 deaths were recorded in British mines in 1947,



Air samplers in a liquid waste storage facility at Dounreay between 20 and 22 February showed *contamination in excess of the maximum permissible concentration*. A faulty joint was discovered leaking a mixture of plutonium isotopes, and after checks it was announced that nobody had received a 'significant' exposure.

13 March 1977 a puff of carbon dioxide containing quantities of radioactive iron and graphite contaminated the hands and clothing of two workers at Chapelcross Nuclear Power Station.

On 22 March at the Winfrith experimental laboratory for reactor fuels, a pvc bag with a content of 8 grammes of plutonium oxide was being sealed when some of the powder escaped. Three people received contamination, judged to be 'within the permissible limits'.

On 26 April an 'empty' fuel element transport flask on the way to Bradwell Nuclear Power Station contaminated its transporter and the roadway over which the flask passed. *The road was decontaminated and resurfaced.*

During an experiment in the Windcale laboratory on the 28 April a plastic waste container popped open and released plutonium activity into the laboratory. A man received external contamination, described as 'insignificant', but BNFL instituted an enquiry and a question was asked in Parliament.

On 29 April, water from a fuel element transport flask spilled on the floor of a railway truck on its way to Winfrith, causing contamination *in excess of the permitted limit.*

On the 10 May a chemical reaction involving about 2.5 kg of sodium in water occurred at Dounreay, and the energy of the explosion blew the concrete covers off a solid waste disposal unit. *Sodium and water are the two potentially explosive elements of the cooling system of the Dounreay Fast Reactor.*

27 May, the radiation film badge of a worker at Windscale showed an exposure of 12 times the annual permitted level, but there was debate as to how much of this dose could be 'attributed' to the worker in question.

On 12 June at the Windscale AGR, xenon 133 escaped from a faulty fuel element, and operation in the pile cap was continued by workers wearing respirators until the 14th. The radiological hazard was considered 'insignificant'.

On the 14 June a Windscale worker's coverall was contaminated on one sleeve and his skin dose was estimated to be *2.5 times the annual permitted dose.* He was removed from radiation work.

On the 9 July, six men in the Windscale plutonium finishing plant received airborne plutonium contamination up to 50% of the permitted level.

A shift foreman, after one week's work at the beginning of July in the oxide fuel cooling pond area at Windcale was found to have sustained a whole body dose *in excess of the permissible quarterly level.* He was withdrawn from radiation work.

21 July, a man in the magnox decanning plant was estimated to have received *more than the annual permissible skin dose of contamination* and was withdrawn from radiation work. Modification to equipment and instructions were recommended.

while by 1970/71 this had been reduced to 92, as a result of mechanisation, and has since fallen to around 50 per annum. The introduction of automated mining techniques, and eventually underground coal gassifaction and liquefaction could cut the death toll dramatically.

It's a matter of social priorities – and for the moment most of the money for research and development is going to nuclear power (£90 million per annum versus £11 million for coal). But even given this imbalance in technological development there are problems in the nuclear industry. In his report on the Windscale Inquiry Justice Parker commented that an examination of 177 minor accidents at Windscale 'disclosed that many of them were due to comparatively simple errors in design, operating instructions or information'.

This sort of situation is of course common in industry generally. Throughout this book we have stressed that nuclear technology is by no means unique. Obviously there are many other industries in which there are serious hazards. In the chemical industry there are often risks associated with possible exposure to cancer forming agents just as dangerous as nuclear radiation. Then there is the risk of major accidents like those at Seveso and Flixborough. However, nuclear technology presents us with risks on a somewhat larger and more long-term scale.

For example, a reactor core melt down coupled with a breaching of the containment vessel, leading to the escape of large

amounts of radioactive material, could kill many more workers – and local people – than a major pit accident or petrochemical plant failure.

A melt down every 17 years?

According to an official estimate by the UK Nuclear Installations Inspectorate following a 'worst case' major nuclear accident there could be 'several thousand deaths within a few weeks of the accident in an area extending about 10 kilometers downwind . . .' Subsequently there could be 'some tens of thousands of cancer deaths over this area', and then, of course, there is the possibility of long-term genetic damage.

Obviously the chances of a major melt down accident are slight – but they are not insignificant. For example the 1975 Rasmussen Report (commissioned by the US Nuclear Regulatory Commission) estimated that a serious accident could be expected to occur in a light water reactor (PWR) once every 17,000 reactor years. Given, say, 1,000 reactors operating worldwide by the year 2000, that means there could be one such accident every 17 years. Of course statistics like this are questionable – in the US, ERDA has used the same report to argue that averaged out over the whole community, the individual's chance of being killed in a nuclear accident is one in 5,000,000,000 (assuming 100 plants). (For a detailed critique of the Rasmussen Report see 'The Risks of Nuclear Power Reactors', Union of Concerned Scientists, Boston, Mass.)

In conclusion, perhaps the fairest way to put it is that nuclear power offers us a relatively clean and safe source of energy *as long as all goes well*, coupled with the threat of very rare but very serious accidents – although this would no doubt be challenged by those who point to the, as yet, unqantified, or at least disputed environmental and safety problems and impacts, occurring during the routine operation of reactors and reprocessing plants.

There is obviously a lot more to say on the topic of nuclear safety: it is currently wide open to debate. As the Windscale Inquiry illustrated, many experts feel that the bland assurances being given by the authorities should be carefully reviewed, and that permitted dose levels should be reduced, particularly for reprocessing workers. But, in the end, the 'acceptability' or otherwise of risks is a matter for social, rather than technical, assessment.

This is precisely the area where it is vital that trade union appointed health and safety representatives should get access to information on accident records, risk analyses and toxicity estimates – and work out their own conclusions and demands. And this is also an area where those representatives will encounter the security requirements of the industry, and the associated limitations on disclosure of information.

* See for example 'Unfair play in the nuclear numbers game', *Guardian*, 20 October 1977.

† See 'Planning and Plutonium', TCPA 1978 for proof of the evidence she presented to the Windscale Inquiry.

* See for example the UK Health & Safety Commisson's report on 'The Hazards of Conventional Sources of Energy' (HMSO 1978), which concluded that there might be 1.8 deaths per GW year from accidents with coal as an energy source compared to only 0.25 with nuclear power. Note however that this report deals only with deaths related to *accidents* and not the wider health effects due to routine emissions. See also D. Rose et al, 'Nuclear Power – compared to what?', *American Scientist*, vol. 64, May 1976.

* See Professor R.E. Ellis's proof of evidence to the Windscale Inquiry in 'Planning and Plutonium', TCPA 1978. Professor Radford, currently chairman of the US National Academy of Sciences Committee on the Biological Effects of Ionizing Radiation claimed at the Windscale Inquiry that the current ICRP recommended standards were twenty or more times too permissive.

On 30 July a process worker in the highly active storage tank area found that his hands were contaminated. His skin dose was initially estimated as 3 times the annual level, but this was revised to just over the quarterly level.

A weekly radiation film badge of a Windscale worker was found on the 6 August to be *well in excess of the maximum quarterly level* and the man was withdrawn from radiation work.

28 August, a process shift manager at Windscale found that his hands and protective clothing were contaminated *in excess of the quarterly permissible level.*

25 September, a process worker found that his coverall garment was contaminated on the right upper arm, and his skin dose was estimated as *5 times the annual permissible level.*

11 October, 6,000 gallons of salt water entered the concrete reactor pressure vessel and gas circulator compartment of the No 4 Reactor at Hunterston B, leaving salt deposits on the base and lower walls of the vessel liner. This, the South of Scotland's first experiment with the 'Salt Water Cooled Reactor', resulted in months of protracted and troublesome remedial work.

On the 4 November a Windscale process worker discovered that his left hand was contaminated. The contamination was removed until measurements indicated that he was free of contamination. The next day, before he commenced work, a check revealed that his left thumb was contaminated, and this was also removed.

12 November, a Windscale worker's knee was contaminated, and measurements showed that *his skin dose had exceeded the permissible quarterly dose.*

On 11 December, personal air samplers returned by two process workers in the plutonium finishing plant at Windscale indicated that they had been exposed to higher than normal air concentrations of plutonium. Monitoring checks indicated that an intake of less than 50% of the permissible level, and the men were returned to radiation work.

CONTINUED ON PAGE 35.

Minor hazards of the nuclear life

You will have noticed, strung along the pages, accounts of some of the minor incidents which have occurred in nuclear plants all over Britain during the last eighteen months.

The nuclear industry has a very good record of occupational safety. We have *not* quoted these incidents to give the false impression that a day's work at Windscale is a sinister and dangerous adventure hushed up in a fug of airborne plutonium. At the same time, these events and the manner in which we hear of them do illustrate larger issues in the debate and real contradictions within the industry. (They also show, without mentioning proliferation, catastrophe probablities, unemployment etc., that these establishments aren't *quite* so white-coated and whirlwind clean as the Ladybird or UKAEA publications would like us to believe).

Every quarter, the Nuclear Installations Inspectorate of the Health and Safety Executive issue a bulletin of accidents which have occurred within the civilian nuclear plants. But, while big business confesses its peccadilloes with democratic flourish, it can always be excused by the Official Secrets Act from mentioning anything deeply embarrassing. This is not to say that the suppression of information and also the responsibility to withhold it have been settled uneasily on the shoulders of *one* interest group. We are informed, but we are not necessarily well informed. In the past we have occasionally been ill-informed.

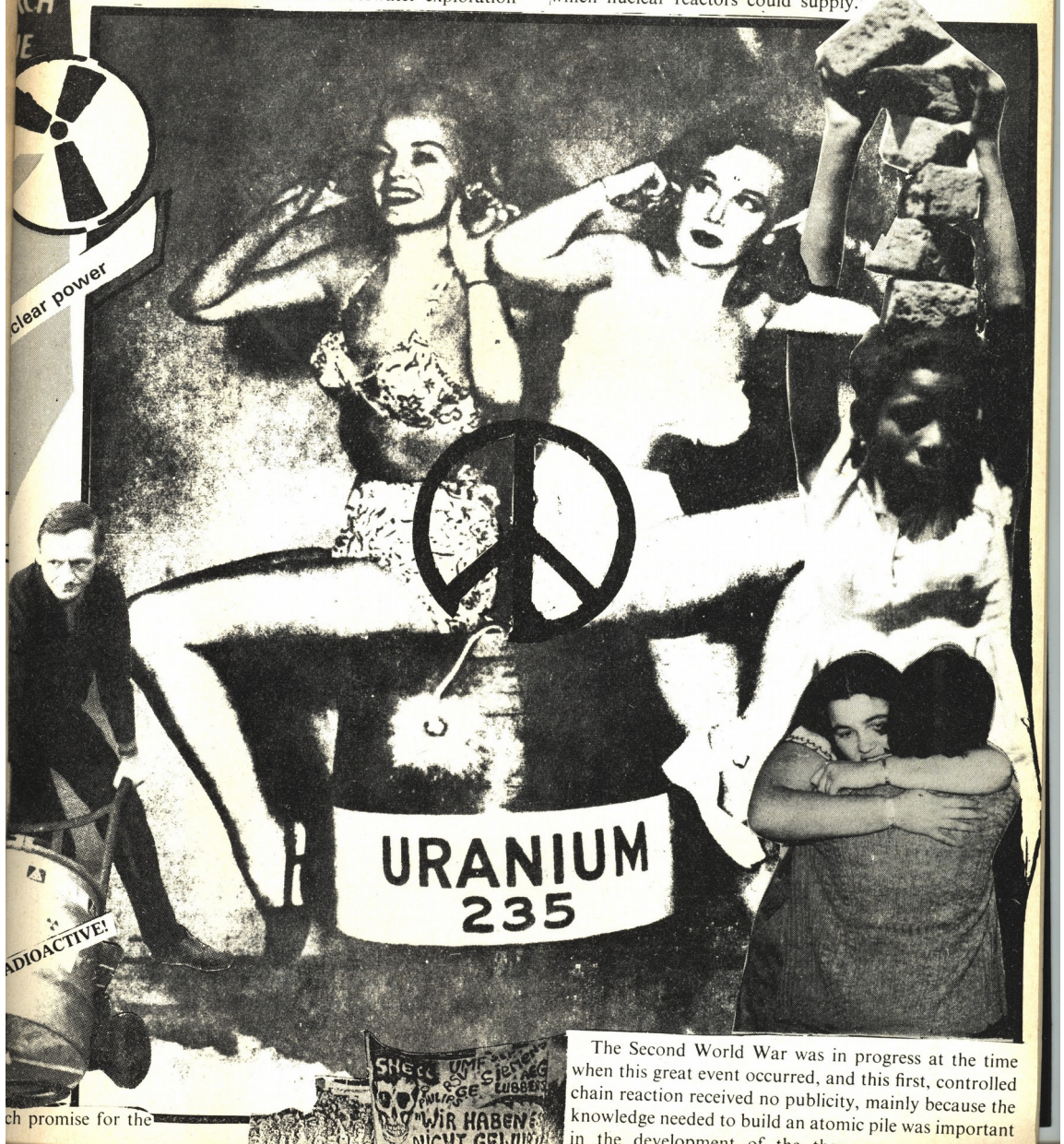
In the nuclear business, the divide between private enterprise and government (government as policy-maker, watchdog and businessman) is quite blurred. BNFL is a state-owned limited company (if you ever heard of such a thing). Both Flowers' and Parker's inquiries rejected suggestions that the Government-funded National Radiological Protection Board is less than independent. It'll be interesting to see how NRPB react to fresh evidence showing risks up to 20 times greater than the recognised risks that current standards are based on. Will they be prepared to recommend realistic safety standards that, in practice, could send the nuclear industry's safety budget mushrooming? So far, they've only attacked the evidence. There are too many contradictions for one to feel quite confident in expecting impeccable assessment of risks and attention to safety.

This is why we cannot accept the attitude and terminology with which these events have been reported: the namelessness of the workers and the assumption that the maximum limits are so well within the limits of *real* safety. As long as nobody knows what is a safe dose of ionising radiation, sticking the label 'minor' or 'not significant' to any incident involving these materials is a necessarily arbitrary business. Of course, BNFL and the ICRP must have some language with which to describe events around them, but we should not feel bound to share the scale of values which they have chosen.

SfP Collective

continued on page 35

It may well be that one day undersea food farms will be developed and much more underwater exploration done. Such projects will need huge amounts of power, which nuclear reactors could supply.



ch promise for the

The Second World War was in progress at the time when this great event occurred, and this first, controlled chain reaction received no publicity, mainly because the knowledge needed to build an atomic pile was important in the development of the

U.K. GROUPS .....

FRIENDS OF THE EARTH Ltd (FOE)
Meetings: regular. Activities: lobbying, publicity stunts, publications, demos. Areas: London and branches all over. Information: alternatives, Windscale. Politics: see separate article.
9 Poland Street, London W1. Tel: 01-437-6121/434-1648.

FRIENDS OF THE EARTH IRELAND
Meetings: weekly. Activities: seminars, ecodomestic work. Areas: Dublin, Belfast, Coleraine, Cork and Wexford. Information: nuclear costs. Politics: non-specific.
17 Arbus Place, Dublin 8.

GREEN BAN ACTION COMMITTEE
Meetings: not on nuclear power. Activities: action on city development and transport, combining environmental and social/labour issues. Areas: Birmingham. Information: jobs and energy leaflet. Politics: argue against nulear power on basis of jobs – more relevant jobs in alternatives – and its incompatibility with grass-roots democracy.
77 School Road, Birmingham 28.

GREENPEACE London
Meetings: regular. Activities: direct action Torness, Heysham etc. Areas: London and on location. Information: general anti-nuclear. Politics: non-violent anarchists.
6 Endsleigh Street, London WC1. Tel: 01-387-5370.

GREENPEACE Ltd.
Meetings: only internal. Activities: direct action to prevent ocean dumping of atomic waste. Areas: London, Edinburgh. Information: various source papers, short paper on nuclear power and jobs. Politics: not until 'nuke programme abandoned'.
47 Whitehall, London SW1. Tel: 01-839-2093.

HALFLIFE
Meetings: weekly or fortnightly. Activities: organised Heysham rally, exhibitions, questionnaires, public meetings. Areas: Morecambe, Lancaster, Heysham, Cornforth. Information: nuclear waste and reprocessing. Politics: 'No'.
12a Sulby Grove, Pare, Morecambe.

MEBYON KERNOW
Meetings: occasional. Activities: political, cultural. Areas: Cornwall (country of). Information: Cornwall nationalism. Politics: nationalist, anti-racist and environmentalist.
Trewolsta, Trewirgie Hill, Redruth, Cornwall (near English border).
Tel: 0209-216796.

NETWORK FOR NUCLEAR CONCERN
Meetings: regular. Activities: lectures, slide-shows, discussions, local leafletting. Areas: Cumbria and district. Information: various and Windscale transcripts. Politics: protection of local communities from nuclear expansion.
Sprint Mill, Burnside, Kendal, Cumbria. Tel: 0539-25168.

NORTHERN FRIENDS PEACE BOARD
Meetings: occasional. Activities: individuals help other groups e.g. FoE, NIN, conference organised in Society of Friends. Areas: various, north of river Trent. Information: pictures of alternative technology. Politics: anti-nuclear weapons side of nuclear power.
30 Gledhow Wood Grove, Leeds. Tel: 0532-667552.

NATIONAL LEAGUE OF YOUNG LIBERALS
Meetings: occasional. Activities: street theatre, weeks of action locally (sometimes nationally). Areas: groups nationwide. Information: nuclear power briefing, AT briefing. Politics: 'we call it libertarian socialism'.
1 Whitehall Place, London SW1.

NUCLEAR REACTOR VIGILANTES
Meetings: 4 or 5 per year. Activities: anti-nuclear stickers, leaflets etc, demos, public meetings, delegations to Benn & co. Areas: scattered local groups in Somerset, Dorset and borders. Information: stickers, 'nuclear power and you' leaflet. Politics: community educational.
3 West Street, South Petherton, Somerset. Tel: 0460-40652.

NUCLEAR INFORMATION NETWORK (NIN)
This organisation is a loose coalition of most of the 'concerned' organisations, from Scottish Campaign to Resist the Atomic Menace to those a little worried about the immediate introduction of the fast breeder. It distributes an invaluable guide to where to go for calibre assistance of virtually any type on virtually any topic challenging the fast breeding of nuclear power. They organise bi-monthly national delegate meetings to create the structure for dissemination of information. NIN also provide addressed labels of member organisations, who should *not* be contacted via Gt. James Street, please – hard-pressed (friendly) voluntary office. Subscription £4 per group (more welcome). No individual members.
c/o 29 Gt. James Street, London WC1N 3ES. Tel: 01-242-3328.

The following groups are all members of NIN:

ALTERNATIVES TO NUCLEAR TECHNOLOGY (ANT)
Meetings: fortnightly. Activities: street theatre, lecture series, 'affinity group' training. Areas: Oxford and outlyings (including Harwell). Information: regional clearing house for official information from AERE Harwell and University colleges. Politics: non-violent anarchists.
22, Peat Moors, Headington, Oxford.

CAMPAIGN AGAINST THE ARMS TRADE (CAAT)
Meetings: very occasional. Activities: education, lobbying, street action. Areas: all over. Information: nuclear power & nuclear weapons and the arms trade. Politics: anti-military.
5 Caledonian Road, London N1. Tel: 01-278-1976.

COLONIALISM AND INDIGENOUS MINORITIES RESEARCH & ACTION (CIMRA)
Meetings: on STOP-URENCO (with Greenpeace) only. Activities: Uranium mining campaign – picketing and film-making, UK speaking tour for Aborigines November 78. Areas: mostly London/international grapevine. Information: Aboriginal Plight and Uranium Mining generally. Politics: radical non-violent support group.
5 Caledonian Road, London N1. Tel: 01-837-9794.

CONSERVATION SOCIETY (CONSOC)
Meetings: regular (55 branches). Activities: MP-bending, Safe Energy Petition, mass media, working groups in many sectors. Areas: nationwide. Information: nuclear dangers, moral aspects, low energy scenario and other environmental. Politics: concerned about industrial injustice (inter) nationally and reforming the balance of wealth and nature.
33 Hasluck Gardens, New Barnet, Hertfordshire. Tel: 01-449-5949.

ENERGY 2000
Meetings: regular committee. Activities: speakers service, lobbying, chatting up politicians. Areas: Sheffield, Barnsley, London. Information: coal. Politics: broad spectrum.
16 Nethergreen Road, Sheffield 11. Tel: 0742-306192.

POLITICAL ECOLOGY RESEARCH GROUP (PERG)
Meetings: occasional seminars. Activities: ditto. Areas: Oxford and elsewhere. Information: 'Oxford Reports' and 'Research Reports' on specific nuclear issues. Politics: 'none'!
36 Wharton Road, Headington, Oxford. Tel: 0865-63416.

SCOTTISH CAMPAIGN TO RESIST THE ATOMIC MENACE (SCRAM)
Meetings: regular. Activities: demos, conferences, local public meetings, exhibitions, direct action, lobbying etc. etc Areas: Scotland. Information: hazards, reprocessing, waste disposal, environmental, weapons, smatterings of international set-up. Politics: umbrella (common-sense radicals).
2a Ainslie Place, Edinburgh 3. Tel: 031-225-7752/229-6854.

SOCIALIST ENVIRONMENT & RESOURCES ASSOCIATION (SERA)
Meetings: regular. Activities: conferences, local meetings, TU branch and constituency Labour Party meetings, intervention in public inquiries. Areas: London mainly – branches everywhere. Information: introductory pamphlet 'Nuclear Power – Why Not?', book 'Politics of Nuclear Power', TU rights, fast breeders, alternative energy. Politics: care about implications of nuclear power for trade union/labour movement.
9 Poland Street, London W1. Tel: 01-439-3749.

TOWN & COUNTRY PLANNING ASSOCIATION (TCPA)
Meetings: conferences several times a year, occasional lecture and discussion meetings. Activities: lobbying on planning, study projects, bookshop, planning aid. Areas: national and regional membership. Information: issues affecting town and country planning especially; inquiries procedures. Politics: conventional.
17 Carlton House Terrace, London SW1. Tel: 01-930-8903/4/5.

cont. page 33

ABOUT IT

6. ANTI-NUCLEAR MOVEMENTS

AGENOR 65 (Options for the Left) on Whyl, Brockdorf and Malville. 13 Rue Hobbema, 1040 Brussels. (Useful tactical/strategic comparison.)

NON-VIOLENCE TRIUMPHANT. Ecologist Vol. 5, No. 10. Dec. 1975. (Account of populist upheavals at Whyl.)

NUCLEAR POWER IN CENTRAL EUROPE. Ecologist Vol. 7, No. 6. July 1977. (The Political Ecology Research Group's account of German nuclear politics. Very revealing and useful.)

OPPOSITION TO NUCLEAR POWER. J. Surrey & C. Huggett. Energy Policy. December 1976. (Limited academic analysis, but useful background.)

** NUCLEAR POWER. J. Berger. Ramparts 1976. (Very useful book – last chapter gives detailed account of opposition worldwide up to 1976.

Articles and news items in PEACE NEWS: No. 1985, 1989 (direct action in Mass. USA), 1990, 1993 (report from occupation at Whyl, West Germany), 2006, 2016, 2018 (4-page pull-out), 2022, 2025, 2030, 2035, 2036, 2042, 2044 (Seabrook, USA), 2045, 2047 (critical look back on Seabrook), 2048, 2049, 2050, 2052 (special nukes issue, including index of past PN's), 2054 (Committee of 100 and direct action), 2055 (Murray Bookchin on Seabrook and Clamshell Alliance), 2056, 2059/60, 2061, 2063 (direct action), 2066, 2067, 2068 (anti-nuclear strategies, 2 articles), 2069 (Scottish issue), 2070, 2071 (Reading anti-nuclear group), 2073 and 2074 (2 articles on Clamshell), 2075 (Torness Alliance), 2076 (women against nuclear energy), 2077 (training for nonviolent direct action, and Clamshell Alliance), 2078. All back issues available from Peace News, 8 Elm Avenue, Nottingham for 25p inc. post.

DAWN: An Irish Journal of nonviolence. No. 42/43 – article on Carnsore Point anti-nuclear demo and Irish anti-nuclear movement. Current issue.

For reports on action in the USA see the journals WIN and LIBERATION both available from Housemans Bookshop, 5 Caledonian Road, London N1.

*** CAMPAIGN AGAINST THE MODEL WEST GERMANY No. 5. 35-page pamphlet on the German anti-nuclear scene. Very good. Campaign against the model West Germany, c/o ESG, Querenburger Hohe 287, 4630 Bochum 1, West Germany.

The Clamshell Alliance, 22 Congress Street, Portsmouth, NH 03801, USA are writing a HANDBOOK FOR CITIZEN ACTIVISTS.

7. FOR FUN

** ALL ATOMIC COMICS. Last Gasp Educomics 1976. From J. Boles, 112 Fellows Road, London NW3. (Nice easy to follow cartoon strip. Very effective.)

THE WINDSCALE INQUIRY. Mr. Justice Parker. Vol. 1. HMSO £3.75. (Similar but not quite so funny.)

SERA ENERGY GROUP – ENERGY CAMPAIGN

SERA (Socialist Environment & Resources Association) has launched an energy campaign, designed to stimulate discussion on nuclear power and related issues within the trade union and labour movement.

SERA already has many good contacts within the trade union movement – together with three affiliated national unions. These contacts are being developed locally by a full-time energy campaigner, who is visiting local trades councils, union branches and labour parties etc.

The immediate focus of this work is the one-day briefing conference for trade unionists to be held at Ruskin College on November 25th. SERA hopes to be able to open up issues relevant to trade unionists that might otherwise be ignored – eg the question of infringement of trade union rights and the employment implications of investment in nuclear as opposed to non-nuclear technologies. SERA energy group has published a number of pamphlets recently:

'Nuclear Power – Why Not?' an introduction to SERA's case against nuclear power.

'Non-Nuclear Energy Options for the UK', a review of the alternatives.

In order to be able to provide more detailed practical assistance and tactical advice to trade unionists, the energy group has set up a special research group, focussing mainly on the problems associated with the FBR. Areas under investigation by the FBR Research group are:–

1. Energy, economics and employment.
2. Trade union rights.
3. Transport of nuclear materials (see article).
4. Health & Safety.

The material produced by this group will be published in the form of working papers – and could of course form the basis of SERA's submission to an FBR public inquiry, if called.

Obviously nuclear power is only one of the many problems that face workers: somewhat similar hazards exist elsewhere in many other industries, and arguably, are likely to have a wider impact on workers. But in some respects nuclear power is unique in its long-term and subtle threat to health and safety, quite apart from its hoped-for, key role in the economy. SERA's aim is not so much to 'Stop nuclear power' but rather to politicize technological decision-making in industry and society generally – for example, by helping trade unionists, both in the nuclear industry and elsewhere, to expand the range of issues covered by collective bargaining to include technological issues, such as investment decisions, product development plans, employment implications and of course health and safety.

For further details, publications and SERA speakers, contact: SERA, 9 Poland Street, London W1.

BSSRS Nuclear Power Group

There is no BSSRS policy on nuclear power but a few people are organising the second workshop at the annual conference, with an eye to a future group. Contact D.R. co-ordinator nuclear group, BSSRS, 9 Poland Street, London W1.

P.S. Also 'radiation hazards' pamphlet is forthcoming from the same source.

READ ALL

1. BOOKS ON NUCLEAR POWER

** NUCLEAR POWER. Walt Patterson. Penguin 1976. £0.80. (A good technical and historical account, but lacking any political perspective.)

** THE FISSILE SOCIETY. Walt Patterson. Earth Resources 1977. £1.00. (Focusses more on the economic and institutional aspects in the UK.)

** WHAT CHOICE WINDSCALE. Czech Conroy. Earth Resources 1978. £1.00. (Good detailed account of FoE evidence, with lots of useful economic and 'proliferation' ammunition.)

* THE WINDSCALE INQUIRY. Ian Breach. IPC 1978. (New Scientist's compilation of reports.)

* WINDSCALE. The Guardian 1977. £1.00. (Guardian's compilation of news reports, including useful ones by Anthony Tucker. Very helpful to have at your elbow if you can't afford the £2 per day for the actual transcripts.)

* PLANNING & PLUTONIUM. Town & Country Planning Association 1978. (TCPA's evidence to the Windscale inquiry. Includes useful papers on hazards of radiation by Dr Alice Stewart and Prof Roy Ellis. Also proliferation by Rotblat.) £2.00.

*** The Flowers Report. 6th report of the Royal Commission on Environmental Pollution. Cmnd 6618. Sept. 1976. £2.65. (Invaluable source book on all technical, safety, environmental and proliferation issues. Well worth buying.

* NUCLEAR POWER — NO THANKS. Friends of the Earth. (Short pamphlet outlining basic arguments — useful for newcomers.)

* FACING UP TO NUCLEAR POWER. ed. J. Francis & P. Abrecht. Saint Andrews Press, Edinborough. 1977. £1.50. (The World Council of Churches et al's surprisingly useful review of the issues.)

* NUCLEAR REACTORS: TO BREED OR NOT TO BREED. ed. J. Rotblat, Taylor & Francis. (A mixed collection of Top People discuss the issue — useful technical background.)

*** NUCLEAR PROSPECTS. M. Flood, R. Grove-White. FoE/Council for the Protection of Rural England/National Council for Civil Liberties. 1977. £1.00. (Excellent analysis of the security implications of nuclear power and the likely impact on planning participation, citizen unrest etc. Very useful material.)

2. BOOKS ON ENERGY GENERALLY

** SOFT ENERGY PATHS. Amory Levins. Penguin 1977. £0.95. (Very useful assembly of the arguments for an alternative energy future, with considerable technical and economic detail, but lacking a radical political perspective.)

** FUELS PARADISE. Peter Chapman. Penguin 1975. £0.75. (Useful analysis of energy use and possible future scenarios.)

* THE ENERGY QUESTION. Gerald Foley. 1976. £0.90. (Somewhat unadventurous review of the problems, but useful background.)

3. PAPERS/ARTICLES ON ENERGY

** ESTIMATING UK ENERGY DEMAND FOR THE YEAR 2000: A SECTORAL APPROACH. Science Policy Research Unit occasional paper no. 5. February 1978. University of Sussex. £3.00. (Useful analysis of energy intensity in industry, transport etc., arguing that by 2000 we could be using less energy than at present.)

** NB A similar study is being done at present by Gerry Leach International Institute for Economic Development.

** Peter Chapman's evidence to the Windscale inquiry — the paper reproduced in the Royal Institution's NUCLEAR POWER AND THE ENERGY FUTURE (1977) is basically the same. Presents fairly detailed scenario of low-nuclear future.

** AN ALTERNATIVE ENERGY STRATEGY FOR THE UK. National Centre for Alternative Technology. Machynlleth, Powys. £1.00. (Really excellent non-nuclear scenario, with detailed technical and economic analysis.)

4. BOOKS/PAPERS/ARTICLES ON NUCLEAR POWER — FROM A RADICAL PERSPECTIVE

*** NUCLEAR POWER: WHO NEEDS IT? Science for the People, May 1976. Vol. VIII No. 3 — also published separately as a pamphlet. (Excellent Marxist critique, based on US material.)

*** THE HAZARDS OF NUCLEAR POWER. Alan Roberts, Zhores Medvedev. Spokesman 1978. £0.95. (Really excellent political analysis by Roberts, focussing on the economic insanity of the multi-nationals. Medvedev illustrates that technocrats in the USSR are just as foolhardy.)

*** THE LEVELLER ENERGY ISSUE. No. 12. February 1978. (Useful compilation of SERA's general treatment on job creation, trade union response etc.)

THE POLITICS OF NUCLEAR POWER ed. D. Elliott. Pluto Press Autumn 1978. £1.95. and THE BIG RED NUCLEAR DIARY. Pluto Press. £1.50. 1979 Diary. (Both develop in SERA/Undercurrents material.)

** UNDERCURRENTS 9. January 1975. NUCLEAR POWER: THE DEVIL WE DON'T KNOW still is a very useful guide. (Back issues still available from UC, 27 Clerkenwell Close, London EC1.)

** SERA: MEET YOUR NEW INDUSTRIAL RELATIONS MANAGER (for Trade Unionists), plus various broadsheets.

AGENOR pamphlets: No. 55, NUCLEAR POWER — FUEL FOR DEBATE; No. 58, NUCLEAR POWER — HEARINGS REPORT; No. 59, NUCLEAR POWER — STOP AND THINK.

5. HEALTH AND SAFETY

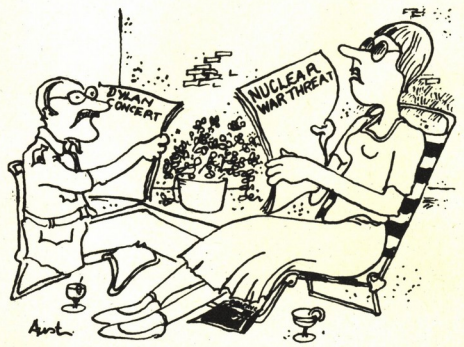
*** HEALTH EFFECTS OF NUCLEAR POWER. Charles Kerr. New Doctor (Australia) 1977. Available from Socialist Medical Association, 9 Poland Street, London W1. (Useful review and comparison of coal/uranium fuel cycles.)

NUCLEAR POWER — COMPARED TO WHAT? D. Rose et al. American Scientist. May 1976. (Reactionary version of above.)

THE HAZARDS OF NOT GOING NUCLEAR. P. Beckmann. Golem 1977. (Polemic on dangers of coal, niceness of plutonium.)

THE HAZARDS OF CONVENTIONAL SOURCES OF ENERGY. HMSO. £1.00. (Limited to accidents only — not health effects.)

** THE RISKS OF NUCLEAR POWER REACTORS. Union of Concerned Scientists, Boston 1977. (Useful critique of US Rassmusen report (WASH-1400) on reactor safety.)



"I suppose it s all part of the nostalgia boom"

AND ABROAD

WORLD INFORMATION SERVICE ON ENERGY (WISE)
WISE is a world-wide information service for the anti-nuclear/safe energy movement, providing the means for direct contact between the various groups working in the field and exchange of information and experience relevant to the action of those groups. WISE Produce fortnightly newspaper (extremely useful) in French, German and English, promote contacts between those engaged in particular aspects of the movement (eg uranium mining) and make available information in response to specific requests. On One of their ruling principles is to avoid any monopoly or centralisation of information, which means active participation by members is vital. *Active members* pay an initial fee of £4, help in practical ways (information, translation, distribution etc.) and have the vote at WISE meetings. *Supporter members* pay £4 a month (for practical reasons 3 months at a time), can attend and speak at WISE meetings but not vote. Subscriptions to WISE newspaper = £3 for first 6 issues. (Libraries and institutions x3). 2e Weteringplantsoen 9, Amsterdam, Nederland. Tel: 010-31-20-221369.

Here are a few contacts in the international anti-nuclear movement.

AUSTRIA
Gewerkschaftler gegen Atomkfraftwerke (Trade Unionists against Nuclear Power Stations), Schottenring 35/1, 1010 Wien, Austria.

AUSTRALIA
Movement Against Uranium Mining, 277 Brunswick Street, Fitzroy 3065, Australia.

BELGIUM
Les Amis de la Terre, 23 Rue d'Italie, Huy, Belgium

DENMARK
Lars Andersen, 00A (Danish Organisation for Information on Atomic Energy), Skindergade 261, DK-1159, Kobenhavn, Danmark.

EIRE
John Carroll, Vice-President, Irish Transport & General Workers Union, Liberty Hall, Dublin 2, Eire.

FRANCE
SNPEA-CFDT (main progressive French trade union), BP2-91 190 Gif sur Yvette, France.

GSIEN (scientists' group for information on nuclear energy), 2 rue Francois Villon, 91 400 Orsay, France.

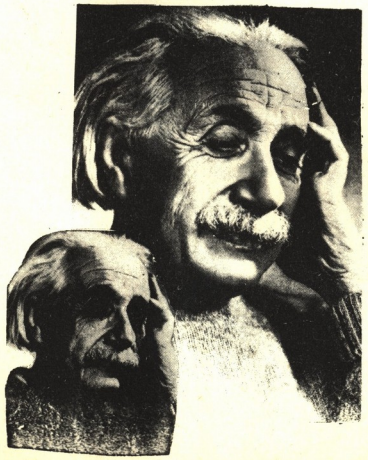
GERMANY (FR)
Aktionskreis Leben (Life Action Group), Heinz Brandt, Hammarskjoldring 14, 6 Frankfurt 50, West Germany.

Arbeitskreis politische Okologie (independent anti-nuclear group), Poppenrade 5, 23, Kiel, West Germany.

BUU Hamburg (main North German environmental and anti-nuclear group) Lutterothstrasse 33, 2000, Hamburg 19, West Germany.

Atom Info Center (Presseburo), Kornstrasse 28-30, 3000 Hanover 1, West Germany.

JAPAN
Jishu Koza (independent forum) Citizens Movement, c/o Jun Ui, Faculty of Urban Engineering, University of Tokyo, Hongo, Bunkyo-ku, Tokyo, Japan.



NETHERLANDS
Stroomgroep Stop Kalkar, Herengracht 109, Amsterdam, Netherlands.

Aktie Strohalm, Oudegracht 36, Utrecht, Netherlands.

Industriebond NVV (main Dutch trade union organisation), c/o MERO kommissie, Plein 40-45, Amsterdam, Netherlands.

SPAIN
Commission for a Non-Nuclear Basque, J M Escubi, Lequeitio, Biscaya, Spain.

SWEDEN
Folkkampanjen mot Atomkraft, c/o Ekoteket, Tjarhousgatan 44, S-116 29 Stockholm, Sweden.

Miljocentrum (environment centre), Ullsaxvagen 14, S-752 48 Uppsala, Sweden.

SWITZERLAND
Swiss Association of Anti-Nuclear Organisations, Andre Froideavaux, Burgunderstrasse 4, CH-4051 Basle, Switzerland.

Forum fur verantwortbare Anwendung der Wissenschaft (Basel) (forum for responsible application of science), 4113, Fluh, Switzerland.

USA
Clamshell Alliance, 62 Congress Street, Portsmouth, NH 03801, USA.

Environmentalists for Full Employment, 1101 Vermont Avenue N.W., Suite 305, Washington DC 20005, USA.

Mobilization for Survival, 1213 Race Street, Philadelphia, Pa 19107, USA

A reactor system which holds

POOH POOHING Pu

(Everyday Hazards of Plutonium)

Although radiation in general can inflict a whole variety of tissue damage and disease, including cancers, genetic defects, burns, cataracts, sterility and early ageing, the industrial hazards of plutonium are usually taken to be cancers (which is tough if you're affected by anything else). Plutonium principally emits alpha radiation which has only a short range in the body (a few thousandths of an inch) and only affects tissue in proximity to plutonium deposits within the body. So the chief cancer risks will be in the tissues where plutonium collects, and gives a significant radiation dose to the tissues.

If plutonium is airborne, the lungs are at risk, since the lungs' defences only clear some inhaled plutonium particles very slowly and may sustain a significant radiation dose. If the plutonium is in a chemical form where it is soluble then the danger is greater, for if airborne plutonium is inhaled (or plutonium skin contamination is ingested e.g. from a cigarette butt, or if it gets into the body through a cut or wound) it goes straight to the blood stream and then collects mainly in the liver and bones. There it gives a radiation dose to the tissues with the risk of bone and liver cancers, and also leukaemia. The current limits on plutonium in the body ('Maximum Permissible Body Burdens') take *only* the risk of bone cancers into account. How great is the risk?

It has been observed that increasing the dose of radiation from alpha particle emitters (like plutonium) increases the likelihood of getting cancer. The unfortunate 'data' on uranium miners, luminous-dial painters who used radium, and radiation-treated patients, all of whom received large body burdens and doses. It is generally assumed that even the smallest doses of radiation present some risk of cancer: even minute quantities of plutonium are capable of giving appreciable doses to lung liver or bone tissue. For example, one ten-millionth of a gram of plutonium in the body gives the Maximum Permissible Body Burden (a gram is a twenty-eighth of an ounce). This gives the death rate of about 1 in 1,000 from bone cancers: the death rate in agriculture, second only to oilrig work and deepsea fishing, is 1 in 1,000. Add to that lung and liver cancers and the death rate is a league-topping 4½ in 1,000, at current Body Burden limits for plutonium.

That's the risk from a ten-millionth of a gram of plutonium. The real worry to management (the risks at current levels are 'acceptable') is if an ounce of the stuff gets loose. To prevent escape of this minute amount is a heavy organisational, monetary and technological burden. To make matters worse, if plutonium only gives out short range radiation how do you detect it in the body or air, from a practical distance? Answer – badly. Only when levels of plutonium are at the unacceptable levels of half the current standards or greater can it be detected in the lung. For plutonium which has entered the body from the lungs, the urine tests which are given are inaccurate and unreliable. The only real way to estimate body burdens is after death at autopsy. Plutonium in the air of work areas is detected poorly, and ever present spurious signals in the detectors often set off false plutonium alarms.

A fact of working with plutonium is the continuing uncertainty of whether or not you are at risk. Being taken off plutonium work, being reinstated due to calculations and miscalculations of body burden; evacuations for false and real alarms of airborne plutonium; even closure of sections of the workplace are on the cards if, as happened at the Atomic Weapons Research Establishment at Aldermaston this summer, workers outside the radioactive areas are found to have ten-millionths of a gram of plutonium in their bodies.

Do atomic weapons research and nuclear electricity justify the work environment of plutonium? Should we not start planning a transition to other technologies?

References

The Toxicity of Plutonium, Medical Research Council, HMSO 1975.
Suggested Reductions of Permissible Exposure to Plutonium and other Transuranium Elements. Journal American Industrial Hygiene. 1975. p.567.

15 December, on totalling their incremental radiation exposure, two maintenance workers at Windscale were discovered to have *exceeded their permissible annual whole body dose.* At first they were withdrawn from radiation work, but have since been returned to their 'normal' work with special limitations on their allowances for 1978.

1978

5 January 1978, routine urine analysis of a worker at the Amersham Radiochemical Centre showed that his tritium intake level gave a whole body radiation dose of 4 times the annual permissible dose. *It was stated that there is a possibility of long-term health effects.*

2 February, a worker at the Windscale laboratories found that after handling a 'decontaminated' flask, his skin dose was *in excess of the quarterly level.*

5 February, a seepage of coolant gas from the Wylfa reactor contaminated 4 workers, and contamination on surfaces in the room where the leak occurred were *in excess of the operational control limit.*

3 March, a fitter at Windscale's magnox decanning plant was discovered to have received *a skin dose in excess of the permissible quarterly level.* He was withdrawn from radiation work.

At Winfrith on 8 April some 'minor' loose contamination in excess of the permitted level was found in a wooden box containing a transport flask. It has not been possible to identify the cause of the contamination.

At Wylfa nuclear power station on 17 April, some thermocouples inside the reactor pressure vessel broke down for two hours.

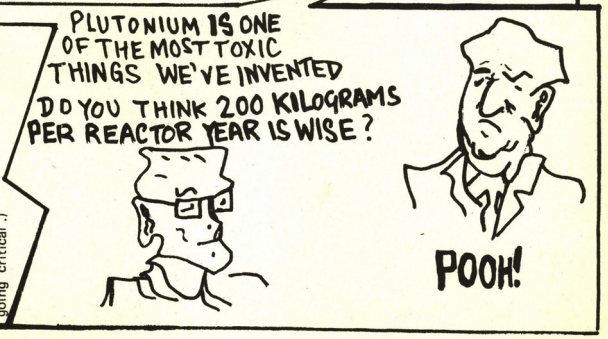
Routine monitoring films issued to two maintenance workers in the magnox fuel decanning plant at Windscale for the period from 23 April to 4 May recorded in one case *a whole body dose in excess of the annual permissible level and a skin dose of six times the annual permissible level, and in the other, a skin dose between four and five times the annual permissible level.* An investigation into the circumstances of the exposures is proceeding.

On 12 May at Windscale, a fingertip thermoluminescent dosimeter issued to a fitter working in the primary separation plant showed a dose to his left hand of between *five and six times the permissible annual level.* The circumstances are being investigated.

13 May a process worker in the plutonium fast breeder reactor fuel fabrication plant at Windscale received a cut which was contaminated through the punctured box glove. The contamination was described as 'not significant'.

A routine monitoring film issued to a worker at Windscale for the month of May recorded a whole body dose *in excess of the annual permissible level.*

18 June, at Windscale, the mass limit in a plant handling mixed plutonium/uranium oxides was exceeded. (If the mass of fissile material within a certain area goes beyond a strict limit a chain reaction will begin, and it is described as going 'critical'.)



STRATEGIES & TACTICS

In recent years, many countries have witnessed demonstrations against nuclear power and attempted occupations of nuclear sites. The Whyl site in Germany was occupied for 18 months. The Seabrook site in the USA was occupied by 2,000 people, of whom 1,414 were arrested. The demonstration at Malville in France was 60,000 strong.

Reading about these events, I found their scale and organisation dramatic. My first impression was that other countries had a more coherent nuclear opposition than our own. Finding out more about these events, I have reservations about my initial optimism. Two main issues seemed to be of importance.

First, what did these demonstrations and occupations achieve in terms of stopping nuclear power programmes?

Second, who were the people taking part in these actions and where, if anywhere, did trade unions stand?

The first question is difficult to answer precisely, but it can be observed that nuclear programmes have continued in spite of these actions. Whilst nuclear activity has slowed, this has not primarily been due to opposition, but rather to economic recession, technical difficulties and overestimation of energy requirements. There is no doubt that demonstrations and occupations perform a key function in any movement against nuclear power, but this function is, I believe, extremely limited. While demonstrations are useful for publicity, and for alerting people to the issue, demonstrations alone will not, and cannot, halt a nuclear programme.

The only way nuclear power can be stopped is for those workers who directly or indirectly build and service the industry to be convinced of its dire consequences for the working class. Looking again at anti-nuclear movements, we find trade unionists few and far between. Certainly the demonstrations and occupations mentioned above tend to have strong local bases of farmers, church people, fisherfolk etc, as well as students, some lefties and liberal and radical scientists. The fact remains that the very people with the power to stop nuclear activity are conspicuous in their absence. Worse still, where the anti-nuclear movement has a middle class base, as in Britain, it is in grave danger of coming into confrontation with, and alienating, the workers in the industry, as the FoE demonstration at Windscale did.

The second strategy is to use legal channels and to force public enquiries. While, like the demonstration, this tactic can be appropriate and useful, it also has severe limitations. Legal action is time consuming and expensive, and more importantly, it plays the game according to the state's own rules, that is, according to bourgeois law. In this country, legal channels for opposing the establishment of nuclear sites are limited. Where, as in Germany, the legal systems were more accessible on this issue, the government has tightened up the law, and closed as many channels to public appeal as possible. Indeed, there are cases where building has proceeded in violation of court rulings. Nuclear power is important for the survival of capitalism, and the state is unlikely to allow its own institutions to be turned against it on such a major issue.

The Windscale enquiry clearly illustrates another serious danger in this kind of action. The Parker report was clearly loaded in favour of the industry. It would have been naive to imagine that it might have been otherwise. Contracts had been made, orders had been placed, the decision about the reprocessing plant had virtually been taken even before the enquiry had published its findings. The problem for anti-nuclear groups is that public enquiries, while offering minimal chances of success, can nevertheless be used as a powerful legitimising function for the state. An allegedly neutral judge has appeared to balance the advantages and disadvantages of the programme, and found in its favour. This legitimising effect is most powerful for those who know little about nuclear power apart from what they have learned through the media. And that is most people.

So, should anti-nuclear groups expend so much of their time and resources on fighting public enquiries which they cannot hope to win, however just the cause, and however cast iron the case? A better tactic might be to hold a parallel enquiry with our own 'witnesses' and our own 'experts'. (I would be interested to know what SfP readers think about this, and particularly what they think of the 'experts', because although I stand against the cult of expertise, 'eminent' scientists could play a useful role in alternative enquiries.)

There remains another tactic which although relatively unexplored, may prove far more effective than either demonstration or legal wrangling. This will be a slow process, carried out at grass roots: to make contact with workers and politicise the issue of nuclear power. This is an area with which the Left should be particularly concerned, and within which the Left should be better equipped to operate than the environmental groups. The extent to which a growth of nuclear power will affect the activities of trade unionists must be clearly demonstrated (see article on page 4).

Trade unionists can be reached in a number of ways: through the left and trade union press, through pamphlets aimed *specifically* at trade unionists, by setting up conferences on nuclear power in conjunction with shop stewards, and through TUC and WEA classes. SERA is making a start in this field, but BSSRS should be more involved.

The signs are that this work is going to be increasingly important. In France, while the Communist-backed unions in the CGT are backing nuclear power, the socialist CFDT is turning against it. In 1974 in Sweden, 85,000 people took part in 7,600 local study groups on nuclear power, mostly run by the Swedish WEA. In Britain a number of shop steward groups and trade unions are beginning to doubt that the government is following a sane energy policy. There is work to be done, and it is clear that if nuclear power is to be stopped, this is where the Left should be concentrating its energy.

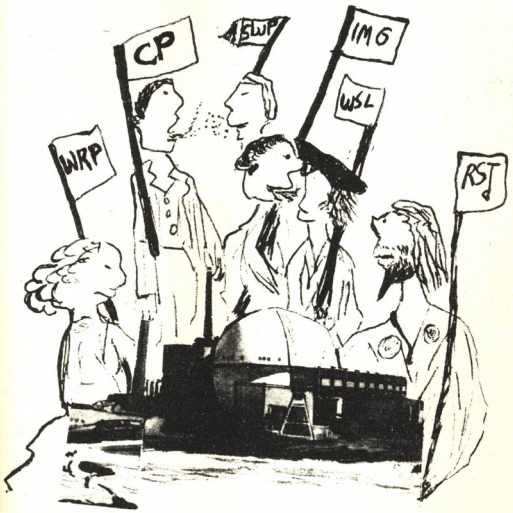
Irwing Garden

The Marxist Left on Nuclear Power

Until recently the left has had little to say about nuclear power. This situation is now changing, and although the left's contribution is still insignificant, debate is taking place within a range of marxist papers and periodicals.

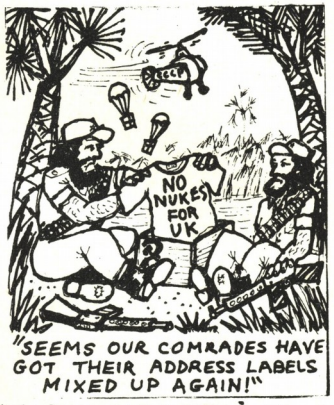
The Socialist Workers Party has now come out firmly against nuclear power, supporting the FoE anti-nuclear demonstration and devoting considerable space in *Socialist Worker* to the nuclear issue. This followed a flurry of letters from readers in response to two articles by Duncan Hallas which argued that 'technology is neutral' and that 'nuclear power as such is of immense benefit to humanity, provided safety is put first' (*Socialist Worker*, 4 December 1976).

The International Marxist Group has also come out against nuclear power, in line with the policy of the Fourth International. The independent, but closely related weekly *Socialist Challenge* has carried regular articles on the nuclear issue, mostly from anti-nuclear activists, including BSSRS members.



The Workers Revolutionary Party has come out against nuclear power under capitalism with the daily *Newsline* carrying a number of informative articles. The WRP pamphlet entitled 'The Windscale Threat' elaborates its case, commenting that capitalism "inevitably turns the conquests of science and technology into forces of destruction" but also that "this destruction is not the consequence of atomic fission itself. The knowledge was used this way because of the requirements of the ruling class. Only the socialist revolution can create the society based on planned production for human need which can utilize this knowledge for the development of mankind."

The Workers Socialist League have argued in Socialist Press against the Windscale development but argue that the main issue is political control over nuclear power. They have called for, amongst other things, "no further work on reprocessing FBR and other reactors until safety precautions are acceptable to workers' committees whose members must be drawn from ALL industries" and for "an increase in state spending on all aspects of research into the exploitation of nuclear power under the control of elected workers' committees".



"SEEMS OUR COMRADES HAVE GOT THEIR ADDRESS LABELS MIXED UP AGAIN!"

Although the Communist Party (CP) is traditionally in favour of 'technological advance', seeing it as socially progressive, it is aware that nuclear power could present problems. As *The British Road to Socialism* puts it: "Further large-scale nuclear development should only take place if and when the vital issues of safety and our responsibility for the future of humanity are satisfactorily resolved." (5th edition 1978). *Morning Star* ran a series of pro and con articles in the spring of 1977, while the Young Communist League paper, *Challenge*, has a definite anti-nuclear bias. (See also review of CP science and technology subcommittee's energy policy document.)

The Big Flame group has also initiated a debate on nuclear power.

Whilst many left groups are currently critical of nuclear power as developed by capitalism, they are not very active in politicizing the anti-nuclear movement or alerting workers to the political dangers of nuclear power. There still remains a belief, at least amongst some of the more traditional marxists, that nuclear power could be beneficial under socialism. These groups have yet to develop an analysis that sees nuclear power as specifically a capitalist technology and, in general, the ideological nature of science and technology. In terms of both developing analyses and being active on the nuclear issue, the left has a long way to go.

P.S. We also contacted *Radical Science Journal*, organ of the intellectual wing of the radical science movement, but they felt that they had nothing original to say on the nuclear power issue.

WHY THE PEOPLE OF PAPUA NEW GUINEA WON'T FREEZE IN THEIR BEDS

In the early 70s, a hydro-electric scheme dreamed up by the Japanese company Nippon Koei was 'sold' to the Papua New Guinea government. It was to be a large dam across the Purari river. A problem, however, was that Papua New Guinea had almost no use at all for the electricity that was going to be generated.

Meanwhile, a consortium of Westinghouse, General Electric and Bechtel were having their plans to build an enrichment plant in Australia violently opposed, and finally turned down.

Gas diffusion enrichment (the method favoured by this gang) requires enormous amounts of electricity, and the Purari scheme promised a cheap supply of power in a land where there would be no highly organised movement in opposition to nuclear technology. The consortium soon made their plans for a $1500 million plant to be built on the Hall Sound. Nor was it long before URENCO (in which BNFL have a third share) smelled the opportunity for cheap enrichment without strings, and sent a team over to Papua New Guinea to talk about building a gas centrifuge plant (which uses about one tenth of the power the American method uses, and so does not even have the dubious virtue of using up the redundantly generated electricity).

When these schemes are fully operational, uranium mined by destroying the land and lives of Australian aboriginals will be turned, using energy that the people of Papua New Guinea have paid for, into fissile material. This will be sent to developed countries who will use it to produce costly electricity to power their further growth and to produce commodities which will further distort the unequal relationship of the west and the rest of the world.

POWER FOR POWER

In February 1969, the Thanom regime in Thailand approved a plant at Pai Bay on the east coast of the Gulf of Thailand.

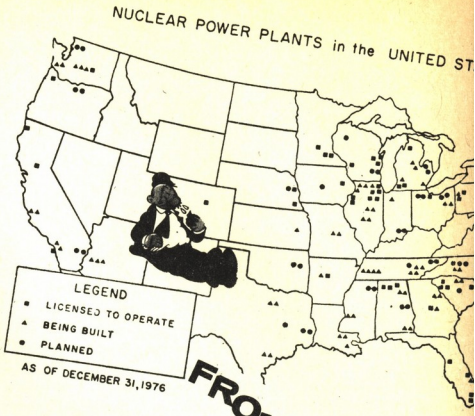
The Thanom regime was overthrown by democratic forces on 14 October 1973 and for three years the nuclear power project was completely stalled by strong opposition from various citizen groups led by Friends of the Earth, Thailand.

On 6 October 1976 the urban democratic forces were bloodily destroyed by the present government, backed by the monarch and the US and back came the nuclear power plans.

The technique used to get approval for the reactor was simple. In August 1977, the Electricity Generating Authority of Thailand (EGAT) threatened to reduce the production of electricity in Bangkok, using the OPEC oil price rises as an excuse. Rich urban consumers (who use 60% of electricity produced) were alarmed. A few days later EGAT announced that it wouldn't cut the supply, but instead would increase its price and proceed with the nuclear power project.

The plant will have a capacity of 600 Mwe and cost at least 1 billion US dollars. It is expected to be built by General Electric.

"Electrification in Thailand has been primarily financed by increasing exploitation of Thai workers and farmers. Only distribution of political power can achieve a decentralised investment pattern in which electricity can play a significant role in fulfilling human needs. Unless the centralised system is to continue and collapse under its own weight, with tragic consequences, the Thai people must now achieve their own liberation. This option has been forced upon the Thai people, not chosen by them." Apichai Puntasen.



FROM THE THIR

By 1977 only three Third World countries were running commercial nuclear power stations. These were India, Pakistan, and Argentina. India was the first Third World country to operate a nuclear power station, which was bought from the US. India now has a second nuclear plant in operation, which was supplied by Canada. Argentina's nuclear station was supplied by West Germany, and Pakistan's small power reactor came from Canada.

Several nuclear stations are under construction in the Third World. India and Argentina are building more stations, and Brazil, Iran, South Korea, Mexico, Taiwan, and the Philippines are all constructing their first power reactors. Further, Cuba, Israel, Thailand, Egypt, Indonesia, Bangladesh, Jamaica, Chile, Singapore, Turkey, and Kuwait are all seriously considering nuclear power.

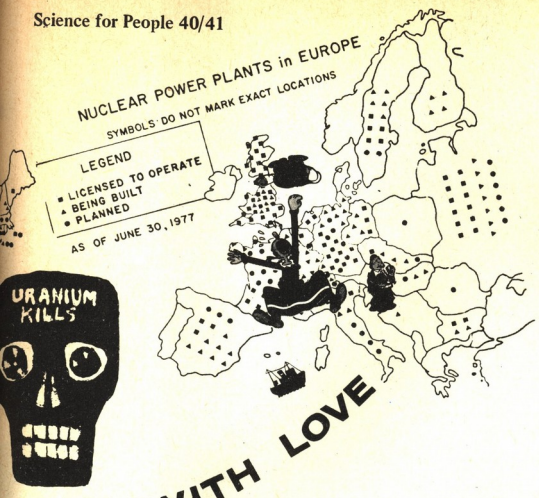
Third World nuclear capacity, of less than 1,000MW at present, remains rather small in comparison to the non-Communist world total of 88,000MW. Some reasons for this are:

1) Nuclear power is a capital-expensive and complicated technology.
2) Third World countries usually have a small demand for electricity which it would be inappropriate to fulfil with a nuclear station (which are reckoned to be economic only in large sizes).
3) Of the uranium reserves so far discovered in non-Communist countries, 85% are held by just four 'developed countries' – US, Canada, South Africa, and Australia.

Perhaps the most significant political factor about the world nuclear industry is the dominance of the US. The US operates 43,000 MW of nuclear stations (nearly half the non-Communist world capacity). The total number of reactors which had been exported in the world (mainly from developed country to developed country) by the end of 1975 was 82. The US had sold 59 of these. Two manufacturers dominate the field, these are Westinghouse, who produce Pressurised Water Reactors, and General Electric, who supply Boiling Water Reactors. Both these reactors require enriched uranium as fuel, and uranium enrichment is a rather expensive process in which the US maintains an absolutely dominant capacity on a world scale.

NPT maintains the balance

Most interest to date on the subject of nuclear power in the Third World has centred around the question of nuclear 'proliferation'. Many people are worried about sales of power reactors to countries which have not signed or ratified the Non-Proliferation Treaty (NPT). This is because a weapons grade nuclear material (plutonium) can fairly easily be extracted from the irradiated fuel. However, this concern often completely ignores the point of



view of the Third World. Those countries which have not signed the NPT have typically taken this stand because they feel it would be unjust for the weaker nations of the world to sign away any possible nuclear weapons capability while the US and the USSR continue to escalate their capability and continue to exercise profound political influence on the world scene. Many non-signatories would ratify the NPT if the US and the USSR were to place stringent limits on their own nuclear weapons activities. To put it crudely, the NPT is seen as a device to maintain the balance of world power.

However, the US does not maintain a unified stance on this question. A conflict of interest over nuclear exports and proliferation can be detected within the US. On the one hand are the political/diplomatic circles who wish to see nuclear power exports halted in order to inhibit proliferation. On the other hand are the business interests who are keen to sell as much nuclear power as possible to the Third World. It is a matter of opinion as to which side appears to be winning at present, but it is interesting to note that the International Atomic Energy Agency (essentially an offshoot of the UN) spends $30 million annually on promoting nuclear power all over the world, and only $6 million on safeguards against proliferation.

Nuclear manufacturers look for new markets

In recent years there have been signs that the developed countries may be beginning to turn away from nuclear power. (For instance, in the US domestic orders for nuclear stations dropped quite sharply in the mid-70s. In the UK, Tony Benn has held back on placing an order for a third generation of nuclear stations. Worldwide, there has been increasing interest in renewable resources.) The result of this could be that nuclear manufacturers turn their hopes increasingly toward the Third World. Whether they will be successful in this respect will depend on whether the US government takes a very hard line on proliferation and on whether the Third World countries believe, or can be persuaded, that nuclear power is economic. A recent estimate (by an employee of the International Atomic Energy Agency) is that the capital costs of a 600 MW nuclear power station amount to $1 billion if interest charges and escalation are allowed for. At this kind of price any country has got to think twice.

Dave Hart

Recommended reading:

Energy Policy for the Rural Third World, Arjun Makhijani from International Institute for Environment and Development, 27 Mortimer St, London W1A 4QW. 80p.

BRITAIN'S URANIUM PLUNDER

While currently being seen as one of the major negotiators seeking an internationally agreed settlement for the independence of Namibia (South West Africa), the British Government's direct and unjustifiable illegal exploitation of Namibia's uranium resources may not be so openly known. Occupied illegally by South Africa in defiance of the United Nations (who are the legal administrators of Namibia), the territory is rich in mineral resources, including vast amounts of uranium. The British Government's decision not to recognise the UN's Decree for the Protection of Namibia's Natural Resources, banning their removal, whilst South Africa's control of the territory continues – and its refusal to declare that South Africa's occupation is illegal – aren't for reasons of uninvolved diplomacy.

The British Government in fact could justifiably be claimed as having a direct interest in South Africa's continued occupation, for through a contract with Rio Tinto-Zinc, signed in 1970, the Government has recently begun to receive its first supplies of 7,500 tons of Namibia's uranium. RTZ's Rossing mine in Namibia, however, while being the largest uranium mine in the world, is heavily backed by South African development finance and their operations together with the British Government's contract have been repeatedly condemned by SWAPO (South West African People's Organisation), internationally recognised as the official representatives of the Namibian people. SWAPO have threatened harsh measures against all those taking advantage of South Africa's illegal occupation when a fully representative government of Namibia is elected.

Despite the Namibian people's views, the British Government is continuing its contract in total defiance of international law. CANUC (Campaign Against the Namibian Uranium Contract), convened by the Namibian support committee, seeks to bring pressure at all levels for this illegal and exploitative contract's termination. Working through the trade union and labour movement and assisted by other anti-apartheid pressure groups, CANUC is requesting urgent support for its campaign.

Further information can be obtained from: CANUC, c/o Namibian Support Committee, 188 North Gower Street, London NW1. 01-388-5539.

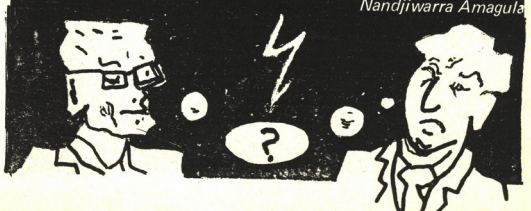
Alan Roberts

LAND RIGHTS NOT URANIUM MINING

"Aborigines want land, they don't want dangerous uranium mined and they reject selfish capitalist values. The Government work through the Land Councils. They've seen through the failed policies of assimilation and integration, that the Aboriginal way of thinking is indestructibly opposed to the dominant outlook. If they can't get the people, get the leaders. If there are no leaders, then create them. Return land. Enough land to satisfy world opinion and silence black militancy, but make sure the people are well locked into the national economy and have as their final, though probably unattainable, goal, the same aspirations as the majority of Australians. With that scenario, land rights is no worry. The people can carry on with their quaint customs as long as they wish." From Bunji, Darwin-based newsletter of Aborigines.

"The dreamtime is not to be touched by white fellas. Mining disturbs the Dreamtime. White fella don't understand."

Nandjiwarra Amagula



WESTINGHOUSE MUDDY THE WATERS

A $1.09 billion Westinghouse reactor is under construction in the Philippines at Morong, near Manila and not so very far (60 km) from an active volcano.

Nuclear generation is singularly inappropriate to the requirements of the Filipino people, but after a substantial kickback from the Westinghouse slush fund, President Marcos was willing to inflict the plant upon the farmers, foresters and fisherfolk who make up 43% of the population while consuming only 2.4% of the electricity.

Even the initial preparation of the site has already disrupted the lives of the local people. Farmers have lost cattle grazing, and road widening has encroached upon rice fields. A 95% reduction in the fish catch has occurred because erosion from the reactor site has increased turbidity in the spawning grounds. These fish supply 80% of the town's income.

The people of Morong have appealed: 'In our time of great need we request that a campaign be started against the export of a nuclear power plant by the Westinghouse Electric Corporation to the Philippines . . . and that no uranium should be exported to us – our people are not ready for the nuclear age. They have not even been asked if they want it. We really don't need that much electricity. It is the big foreign businessmen, mainly American and Japanese and some Australians, with the co-operation of the present oppressive government who simply want to make us a dumping ground for their products.'

Aware of the local opposition, the National Power Corporation launched a 'public acceptance campaign' – rather more than just a regular PR job. They staged a meeting with residents at Morong High School in August 1976. As soon as the townspeople were assembled, they were surrounded by 60 soldiers and the local police force.

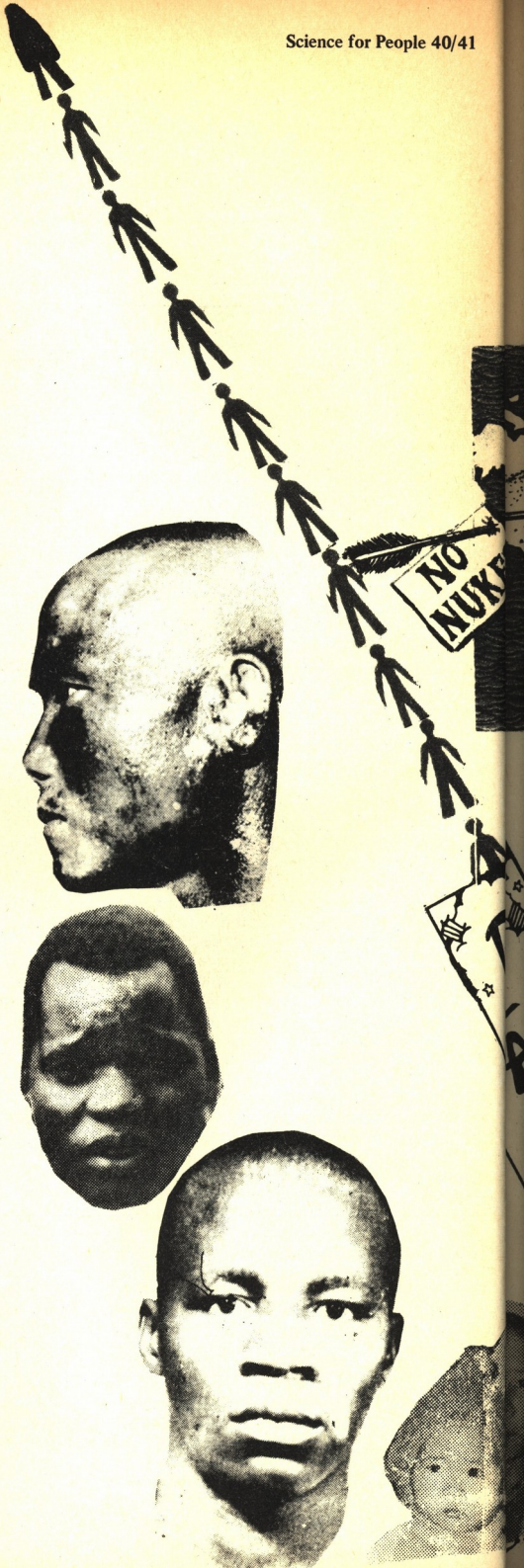
When Methodist Pastor Pascua asked tentatively how the corporation intended to control airborne pollution, he was silenced by the commander of the troops: 'Surely, you're an activist, aren't you? I will have you arrested.'

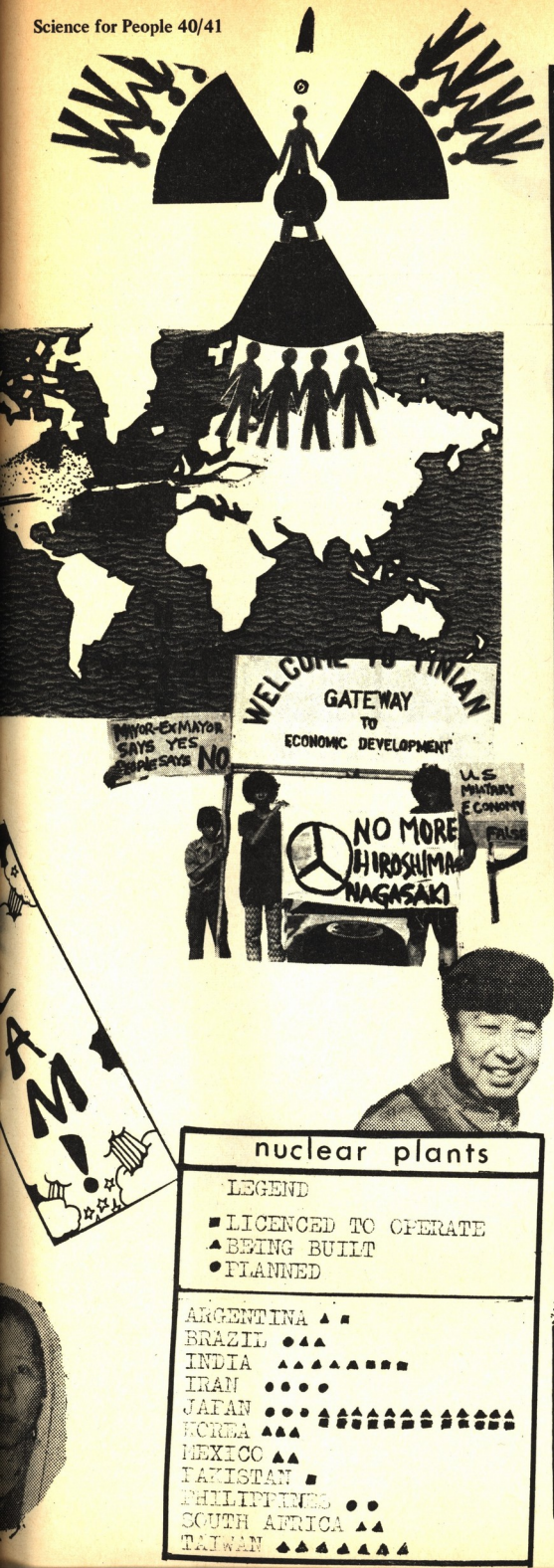
THE FIRST URANIUM WAR?

With differences over questions of nuclear safeguards, the European Community can be far less assured of obtaining uranium supplies from the US and Canada. Alterantive supplies will become much more significant.

This may explain why it was a French initiative to send paratroopers to 'protect French nationals' in Zaire's uranium rich Shaba province during May this year. Certainly there are far fewer French civilians in Shaba than Belgians, but the French Government have recently embarked upon a massive programme of construction for nuclear energy generation. The French seem convinced that only the Mobutu regime can guarantee the continued unity of Zaire and access to Shaba's uranium supplies; President Giscard has made no secret of his intention to support the military dictatorship of General Mobutu by whatever means necessary.

Even pro-nuclear Sir Philip Baxter, ex-Chairperson of the Australian Atomic Energy Commission, agreed that 'if you put power stations into under-developed countries, it will be the rich, usually the dictatorial governments who run most of these countries today, who will get the benefit.'





WHITE MAN IN RUSH FOR YELLOW METAL – AGAIN

American Indian people own and control approximately 55 per cent of the United States' uranium supply. Most of the uranium is concentrated on the Navajo and Laguna Pueblo reservations in the "Grants Mineral Belt". In addition, there is also significant uranium activity on the Spokane Indian Reservation in Washington State.

Indian people are directly affected by the first phase of the nuclear fuel cycle: uranium exploration, mining and milling. For instance, the largest uranium stripmine in the world is located at Laguna Pueblo and the country's largest uranium mill is located in the Ambrosia Lake area which is near the eastern portion of the Navajo Reservation.

In the 1950s, there were several active uranium mining and milling projects in the Navajo Nation. Due to the high level of radiation exposure, about 20 Navajo uranium miners have died of lung cancer and another twenty miners have developed terminal lung cancer.

The unstabilised tailings at an abandoned uranium mill near the San Juan River in Shiprock also pose a dangerous public health hazard to the local Navajo people. Radioactivity from the tailings are blown into the air, it seeps into the river, and leaks into the underground water tables. This, in turn, affects all living things in the Shiprock area: vegetation, livestock, and humans.

The Exxon Corporation is now exploiting 400,000 acres of land in the Four Corners of the Navajo Nation for the purposes of uranium exploration, mining and milling. Not only have the majority of the Navajo people living in the Exxon lease area opposed the project but the lease area includes the same locale where 40 Navajo miners have died or will die as a result of exposure to uranium radioactivity.

Gulf Oil Company is presently sinking the world's deepest uranium mine shafts into Mount Taylor. Mount Taylor is one of the four sacred mountains of the Navajo people. Such activity is considered a violent act of sacrilege and desecration.

There is also proposed uranium exploitation slated for the Churchrock, Crownpoint and Canoncito areas of the Navajo Nation as well as the San Felipe and Santo Domingo Pueblos.

The National Indian Youth Council recognises our enemy is the federal government and multi-national energy corporations We also recognise that our struggle is an international struggle because our enemy is a multi-national one. The same corporations which are exploiting the uranium resources of the Aboriginal people of Australia and the indigenous peoples of Namibia also exploit Indian people in North and South America. We work with these native peoples to fight against the common enemy and to protect our land, way of life and our future.

STATEMENT OF THE NATIONAL INDIAN YOUTH COUNCIL, NEW MEXICO. JUNE 1978.

"These white people don't have the same kind of beliefs that we have. I hear people talk about land claims but it's very hard for me to claim land that I already know is mine. It is the white people who should come to us with land claims."
Peter Deronger, North Saskatchewan.

BSSRS

A Policy on the way?

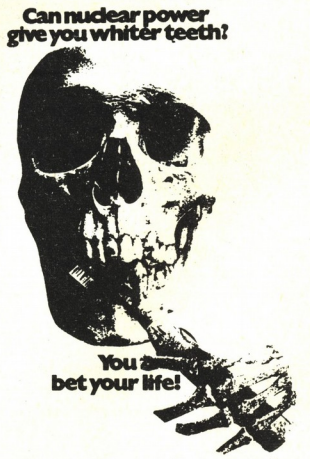
BSSRS has been trying for a very long time to become involved in the nuclear power issue, but it has been a slow process drawing together the people interested, the necessary information and the energy required to form a working group. (See Internal Bulletins 8 and 9 and SfP no. 39 for a more detailed history of this struggle.)

The current position is that we now have a basic core of names and addresses, someone prepared to be responsible for co-ordinating a group and the following draft discussion document, which arose from a BSSRS steering committee meeting session on nuclear power. As you read it, bear in mind it is NOT a BSSRS statement of policy and your comments, criticisms and contributions are vital if we are ever to achieve such, as a basis for active involvement in the anti-nuclear movement.

BSSRS NUCLEAR ENERGY DRAFT STATEMENT

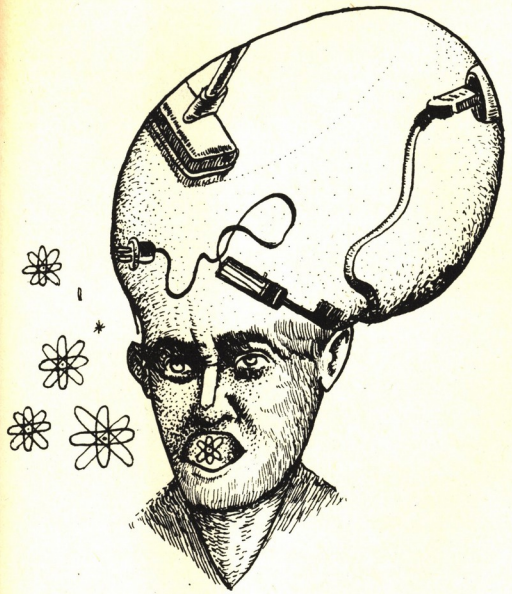
1. Any technology always involves hazards of some kind. The viewpoint which BSSRS has developed is that these must be understood by those who are exposed to them, and that *their* assessment of what is acceptable must override any criteria of economic or technical expediency. The questions raised by nuclear technology appear to us, as to many others, of a different order from 'conventional' hazards. For reasons to be set out below we think that no conceivable system of safeguards within society as it is organised at present could persuade us that our criteria for acceptability were met by the nuclear industry. Accordingly we join with all those who call for an immediate end to the development of nuclear technology, and for a comprehensive socially responsible energy policy for the future.

2. The current British nuclear programme is based on the assumption that only nuclear energy can fill the 'gap' which we must face over the next thirty years or so, until alternative sources are developed, to a viable level.[1] The question of whether this gap exists or not is contested; however, nuclear reactors are the worst possible way of bridging it from the viewpoint of energy consumption itself, owing to the fact that a very large expenditure of energy is needed for the initial process which sets a reactor in motion (in particular fuel enrichment).[2] Hence the short-term energy gap will be worsened rather than benefited by a developing nuclear programme. If therefore there is an energy crisis, nuclear reactors cannot affect it in the near future, and a serious social reorganisation of our use of energy – by insulation systems, rationalisation etc. – is essential.



3. A number of accidents in reactors have occurred – and much worse ones are agreed to be possible. And whereas an accident in a factory or mine affects at most the workforce and the nearby population for a limited time, an accident in a nuclear reactor or reprocessing plant can release pollutants which damage the environment over a wide area for an indefinite future.[3] In fact even a very small rate of leakage of radioactive materials which could be considered acceptable becomes highly dangerous when – as is envisaged – a large number of reactors are in operation throughout the world over a period of years. Until all those who may face these effects understand and accept the risk involved, 'consultation' has not seriously taken place. And yet the information is hard to obtain; risks have constantly been denied by those in the nuclear industry, and security has made it easier to conceal accidents.

4. Although those who work in a nuclear industry may have the formal protection of industrial hazards legislation, in practice the price they pay is excessive – and not only in terms of the risks they accept. The military implications of nuclear technology mean that open discussion of problems involving safety within the industry with outsiders (trade union representatives or MPs for example) may be considered a breach of security. And anxieties about the 'escape' of plutonium have led to increasing security consciousness in the last few years. In any nationalised industry the advantages gained by workers from public control and accountability can be offset by the difficulties of appealing to one part of the State against decisions taken by another. But these problems become critical when, as in the nuclear industry, the State imposes conditions of secrecy, and accountability can be overridden by questions of security.[4] The basic needs of safety for workers in an industry are then endangered.



5. For all these reasons we are convinced that nuclear technology in its present state of development is so dangerous that it must not be allowed to continue. By this we mean that for any acceptable nuclear technology the problems of safety and of waste disposal must *first* be effectively solved, and the solutions must be openly available and agreed democratically. So that while future technologies and a better organization of society might lead to something which we could call an 'acceptable' nuclear programme, it does not exist at present – and certainly the use of nuclear energy as a short-term solution for an energy gap is both irrelevant and highly dangerous.

6. There are alternative energy policies which have been obscured by the competing claims of different industries, and in particular by the nuclear programme itself, which acquires increasing inevitability as a result of previous options. Energy policy should now be discussed seriously in terms of the social organisation of the community as a whole, and of the process of production. We are not opposed to a high energy consumption society on principle – it may well be possible. But the social cost of basing such a society on nuclear energy is too high.

BSSRS Nuclear Power Group

There is no BSSRS policy on nuclear power but a few people are organising the second workshop at the annual conference, with an eye to a future group. Contact D.R. co-ordinator nuclear group, BSSRS, 9 Poland Street, London W1.

P.S. Also 'radiation hazards' pamphlet is forthcoming from the same source.

7. A total shutdown of Britain's production of nuclear energy such as we are proposing obviously has serious social consequences. We see it as part of a general reorganisation of energy policy, and one which would be likely to create jobs rather than lose them. Clearly it should be carried out in a responsible way so that workers in the industry would be able to use their skills in the development of the alternatives which are needed in the short and long term.[5]

Luke Hodgkin

REFERENCES

1 There are of course those who see nuclear energy as a long-term solution to our problems as well. Some of them might still feel that it is not acceptable in its present form, so it's reasonable to separate the arguments.

2 It is calculated that it takes an average of two years for a reactor to 'pay back' the initial energy costs (we are not speaking of capital) required to set it in operation. It also takes six to nine years to build a reactor – and the process is taking longer since the involvement of environmental groups has gradually forced the *necessary* public discussion before any decision to site a reactor is taken.

3 It is worth comparing the scale of the disaster at Seveso (an appalling industrial accident which should never have been allowed to occur), with the accident to a nuclear reprocessing plant in Siberia documented by Zhores Medvedev (NS 30.6.77, reprinted in 'Hazards of Nuclear Power'). At Seveso there were deaths, widespread injuries and sickness, and a serious risk of genetic damage *at the time*. The accident in Siberia – though accurate facts are hard to come by – seems to have caused all these effects at the time, and to have made a large area (hundreds of square miles) uninhabitable for years to come through soil and water pollution.

4 The British experience seems to have special features which stem partly from the public ownership of the industry, partly from the great reluctance of our civil service to open its procedures to investigation, and partly from the relative weakness of any public pressure on nuclear hazards until recently. For example, where plant security has been a matter of public debate in many countries, and certain anxieties have been openly voiced by those responsible, in Britain information about transportation and plant

been openly voiced by those responsible,
'in Britain information about transportation and plant security is not on record, neither the criteria applied nor any indication as to whether they are being met in practice.' (Patterson p.253)

5 The Lucas shop stewards' combine's proposals provide an example of the creative way in which workers in an industry can initiate and develop their own alternative planning.

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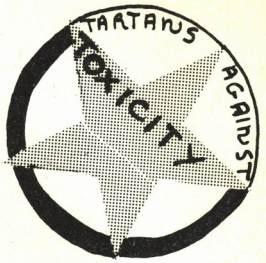
The Anti-Nuclear Movement in SCOTLAND



Many readers are probably well equipped to tackle Malthusian excesses of some environmentalists but a detailed critique of the arguments of the anti-nuclear movement can only proceed from a thorough analysis of the reasons for the present development of nuclear power in capitalism. Hopefully, elsewhere progress will be made towards this analysis, and when it is sufficiently complete, we can use nuclear power as an example to illustrate the social functions of science and technology, and to show that the fight for an energy policy which meets the real needs of people is inseparable from the fight for socialism.

However, this doesn't mean we have nothing to say to the movement at present, for the theory and practice of BSSRS has equipped us with an understanding of general relationships between science, technology, and capitalism, which at least allows us to criticise, and to point the way forward on an organisational and tactical level. The BSSRS policy statement expresses the nature of science within capitalist society as follows:

> "Science is not neutral. It cannot be separated from politics. It both reflects and helps to determine the values of society. Science and technology increase the power of the already powerful and frustrate the expectations of those outside the ruling class."

The first point made, that science and technology cannot be separated from politics, from which it follows that the anti-nuclear movement must be political, is now accepted by most of the movement. Friends of the Earth, for example, have talked of "social and political aspects" of nuclear power for years. However, failure to recognize the second point – that science and technology serve the interests of the ruling class – has organisational and tactical consequences. While it is trite to say that the anti-nuclear movement should be more political without saying what type of politics it should take up, it is similarly trite to say that the anti-nuclear movement should be more oriented towards the labour movement without suggesting how this might happen. In this article I look at the way anti-nuclear campaigns have been conducted in Scotland in the past, and the potential for the involvement of the organised left and for carrying the campaign into the labour movement at present. This article therefore takes it as a premise, that existing analyses[1] are sufficient to show that it is in the interests of the working class to oppose the further development of nuclear power at this time.

It is encouraging that the understanding of the nature of science and technology in capitalist society manifested in much of the left press at the time of the London Windscale demonstration of 29th April was very similar to that expressed in the section of the policy statement discussed above. At the moment, the anti-nuclear movement certainly is becoming "radicalised", and the potential now exists for it to break away from its apolitical origins. However, at present this "radicalisation" means a trend into anarchist politics, so in order to bring out the class function of science and technology, and the necessity of campaigning along class lines, it is now essential that the organised left develops the analysis referred to above, and begins to participate in the movement at a practical level. The changes in organisation that the movement is currently undergoing provides an opportunity for this.

In Scotland, there have been several local campaigns against test drilling for suitable sites for mining uranium or dumping nuclear waste, and in the south east the campaign against the proposed AGR at Torness. Some of the anti-nuclear power groups have been involved with CND in a campaign against a tritium (H bomb fuel) plant at Chapelcross, but there seems to have been little activity around the other established installations such as Dounreay, Caithness

The anti-mining struggles

In 1968-73, the Institute of Geological Surveys (IGS) carried out reconnaissance operations in the north of Scotland as consultants for the South of Scotland Electricity Board (SSEB), who are anxious to secure a "strategic reserve" of uranium. They have expressed interest in deposits in the Orkneys, Caithness, Sutherland, Skye, and around Banchory, Deeside, and now wish to conduct exploratory drilling in several of these areas, which would be followed by evaluatory drilling by a mining company, such as Allied Chemicals, RTZ, Occidental, or BP.

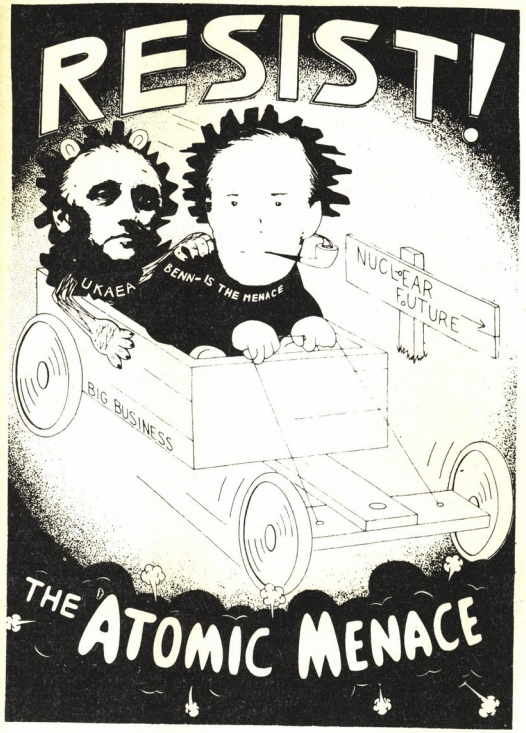
Orkney

In early 1976 the SSEB announced their desire to test drill an area in the Orkneys and at the same time were doing preliminary surveys and asking landowners for permission to drill. Some forty farmers signed agreements for boreholes to be drilled on their land without realizing that they were also giving away extraction rights for seven years, and an option to buy the land!

The SSEB finally sought permission to drill in a five mile coastal strip north of Stromness, but they failed to account for the fierce local opposition led by the Orkney Heritage Trust and Orkney FoE. FoE kept a low profile, e.g. they referred the BBC to well-respected locals, but added fuel to the fire with leaflets and pamphlets. The local paper received hundreds of anti-drilling letters, and took an anti-drilling stance. The planning department received 3,500 formal objections from a population of 17,000, and the planning committee rejected the proposal while 200 demonstrators stood outside the council offices in Kirkwell. Two weeks later, in February 1977, the Orkney Island Council, with 400 demonstrators outside the meeting, refused planning permission on the grounds that as local people would never allow the mining to go ahead, test drilling was pointless. By this time two-thirds of the farmers who had signed agreements were said to regret it, but the agreements mean that the SSEB may be able to pressurise Westminster to overrule the Orcadian opposition at some time in the future, or may be able to force a public inquiry. Orkney deposits are of a higher grade than some of those overseas currently being mined, and if the UK has a substantial thermal nuclear reactor programme, it may prove very difficult to stop Orkney being ripped off.

Banchory

In early 1977 the SSEB announced their desire to conduct test drilling at two sites in the Banchory area, Deeside, and in April this was met by an information leaflet produced by Aberdeen FoE. The SNP also took an anti-drilling stance, and leafleted every house close to the proposed site. They encouraged locals to make formal objections to any application to drill, and to write to councillors, MP's etc. Later, in June, Aberdeen FoE produced a well-illustrated 28-page pamphlet,[2] aimed at the public and local decision makers.



The pamphlet gives a detailed account of the technicalities and environmental impact of uranium mining, the likely specifications of the mines are worked out, translated into illustrations, and compared strikingly with photographs of the existing landscape. The initially mixed, and longer term harmful, effects on the local employment situation are discussed and detailed estimates of the construction and operating workforce are given.

In early November a public meeting was held in Banchory town hall to hear the SSEB and Aberdeen FoE explain their case. Speaking for FoE were Walter Patterson, and two speakers from Orkney. FoE experienced some resentment as outsiders, but the SSEB experienced more and the meeting resulted in the formation of a local residents' action group, a petition, and another meeting to plan further action. The local group circulated all local councillors, MP's, and local papers. In February 1978 it was reported in *The Times* that the SSEB were withdrawing their plans, without having applied for planning permission.

For the time being, the Orkney and Deeside anti-mining campaigns appear to have succeeded, at least in achieving their immediate objectives. Of all the anti-nuclear activity in Scotland, there seems to have been the least involvement of the labour movement in the anti-mining campaigns. In the future the major task for those who initiated the campaigns will be to keep the issue alive to guard against new attempts by the SSEB to implement their plans. If they have appropriate resources they should now attempt to initiate discussion of the issue within the labour movement locally and build on the newly generated "energy consciousness" in the community in order to involve more people in other campaigns around nuclear power and energy in general.

The latest news on mining is that geologists from Minatome, a Paris-based company, plan to survey Dulbeatlie, Kirkcudbrightshire, later this year. They intend to stick to south Scotland following the experiences of the SSEB in the north, but they won't require planning permission at this stage. Most authorities seem to indicate that it is unlikely that they will find economic deposits of uranium.

The anti-dumping struggles

The UKAEA have been trying to get their part of an EEC research project on nuclear waste dumping started for some time. They are supposed to be studying hard rocks, were advised on the likely spots to try by the IGS, and are now trying to get permission to do some test drilling. The project is directed by Mr. Feates, head of environmental safety at Harwell, who has become in south-west Scotland the person whom everybody loves to hate.

According to *Hansard*, 2.3.77, test borings were being considered in Galloway and Dumfriesshire at that time, while in Cornwall the intention was to use existing holes as far as possible. The earliest boring could start would be late April 1977, while sites for actual disposal would not be sought for another three years at least, but this is now far from being realized. The report of the Royal Commission suggests that the government should be looking for a national repository.

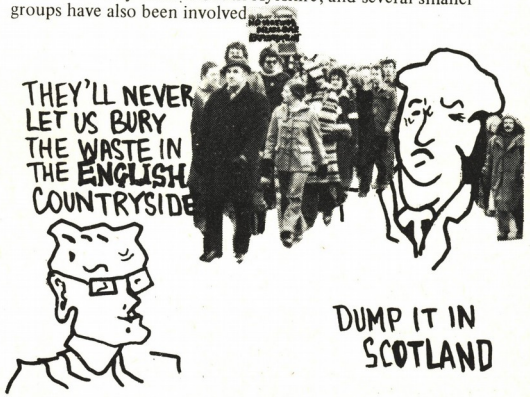
It has been suggested in the *Scotsman*, 31.12.76, that if the Windscale expansion goes ahead, a waste disposal site will have to be found within 15 years, and Mr. Feates has been reported as mentioning Loch Doon (Galloway and Dumfriesshire), the Outer Hebrides, the north-west coast, the Western Highlands, the Cheviots, the Lake District, and Cornwall as possible sites for research (the *Scotsman*, 15.3.77). However since then it appears that permission to proceed with test drilling has only been granted in one Scottish county – Caithness, which was not originally mentioned.

South-West Scotland

This area has seen a very vigorous and still-continuing anti-dumping campaign since the intentions of the UKAEA became known through a Panorama programme in late 1976.

Eventually, in January 1978, a request was lodged with Kyle and Carrick District Council for permission to carry out test borings in the rocks at Mullwharcher, near Loch Doon. However, following an unsuccessful attempt to have the decision called in by the Secretary of State for Scotland, and the involvement of several other councils, the most recent development seems to have been an open meeting of the Kyle and Carrick Planning and Building Control Committee "to hear objections", held at the end of August.

The UKAEA has been visiting schools and other places with exhibitions and lectures, and Mr. Feates himself has appeared on several occasions. The anti-drilling campaign has been led by SCRAM South-west, based in Dumfries and Galloway, and Campaign Opposing Nuclear Dumping (COND) on the other side of the Galloway Hills in South Ayrshire, and several smaller groups have also been involved.



SCRAM SW was formed in mid-1976, and after ten months had collected 10,000 signatures for a petition opposing dumping (one-quarter of the adult population of Galloway), and had won considerable support from the unions. Dumfries and Galloway NALGO had an anti-dumping resolution carried at the 1977 STUC annual conference, and local branches of the STGWU also have an anti-dumping policy. SCRAM speakers have attended branch and trades council meetings, and when Thurso (near Dounray) Trades Council asked Dumfries and District TC for support for development of the FBR it was refused.

More recently SCRAM SW organised a "safe energy exhibition" which toured the area to counter a UKAEA public relations exercise. Early 1978, in the first issue of their bulletin, SCRAM SW urged readers to join in their letter campaign by writing to various representatives and officials, and to lobby a number of organisations such as local community councils, political parties, unions, women's rural institutes, farmers' organisations, conservation and recreational societies, and churches.

COND is a "strictly non-political" organisation formed in 1976 and based in Dalmellington, the nearest population centre to Loch Doon. They have run a very vigorous campaign of public meetings and incessant lobbying, gained the backing of the *Ayrshire Post* and organised a rally at Loch Doon in June 1977 attended by 3,000 people.

The COND demonstration in Ayr in January was attended by about 2,000 people and it was led by a pipe band and majorettes, and ended with a rally addressed by Dr. Ali (chairperson of COND), George Younger (Conservative MP, Ayrshire), Jim Sillars (Scottish Labour MP, South Ayrshire), and George Thompson (SNP, Galloway).

The SNP have been remarkably active in the anti-dumping campaign, seeing a conspiracy by the English to make Scotland the world's nuclear dustbin. At the 1977 annual SNP conference the resolution on the agenda which attracted most support was on nuclear dumping rather than constitutional reform and in January the SNP organised their own anti-dumping demonstration in Ayr.

Whether or not the campaign in the south west has achieved its objective of getting any application for planning permission to test drill refused, will become apparent within the next few months, but they have certainly been successful in arousing public interest in the issue. One of the smaller anti-dumping groups in the area, Cause for Common Concern, based around Wigtown, conducted an opinion poll in Ayr and found 81% of people opposed the research, and surveys conducted by local newspapers have given similar results.

While COND's demonstration had many characteristics of an anti-fluoridation campaign, SCRAM SW's success in carrying the campaign into the labour movement has surpassed that of other anti-nuclear campaigns in Scotland. If the anti-drilling campaign succeeds, SCRAM should build on the "energy awareness" in the community and raise questions of nuclear and energy policy in general. The establishment of an anti-nuclear waste dumping policy in some unions provides an opportunity for activists to call into question the overall energy policy of those unions, the policy of the union in other regions, and the policy of other unions.

Deeside

In March 1978, the AEA wrote to the regional and district councils on Deeside concerning the surveying for possible waste dumping sites, but the councils, following the mining episode, asked for more information. When this was unforthcoming it was assumed that they had lost interest, but in mid-August the local *Evening Express* reported that surveys were being conducted without the permission of landowners. The uproar following this revelation makes it highly unlikely that permission to test drill will be given in the foreseeable future.

Caithness

Following these setbacks, the AEA finally retreated to the relatively pro-nuclear area, Caithness, in the far north, the home of the nuclear research station at Dounray, established 1954. They now have permission to drill there, on the condition that there is no intention to actually dump. In the formal objections, SCRAM and others pointed out that the desire to drill here wasn't because it is a suitable site geologically, but because the AEA couldn't get the planning permission they needed elsewhere.

SCRAM and Torness

The application by the SSEB for permission to build a power station at Torness, near Dunbar, East Lothian, about 25 miles from Edinburgh, was considered by a week-long public inquiry in June and July 1974. The objectors included Walter Patterson, several Scottish academics, and a few locals, but there was far less opportunity to discuss wider issues than there was at the Winscale inquiry. The reporter, Mr. Bell, concluded:

> "The wisdom of nuclear generation policy was seriously questioned by objectors at the inquiry, but this is a matter of national policy and is not one upon which recommendations can be made."

SCRAM was set up by Adrian Grant, the secretary of the Scottish Conservation Society, and Mary McClintok, of FoE Edinburgh six weeks before a meeting of forty people on the site at Torness on Remembrance Sunday 1975. The meeting was addressed by three academics from Edinburgh University. It was decided to organise regionally, and that SCRAM would aim to be an umbrella organisation co-ordinating action. In practice it seems that most of the co-ordinating work has been done by people also involved in the Lothian regional group, based around Edinburgh.

SCRAM never had a formalised structure until 1977, and was variously described as, for example, "a federation of Scottish groups of FoE and Con. Soc. and other groups and individuals".

In April 1976 a weekend camp was organised on the Torness site which involved about 100 people. This was part of the FoE "Nuclear Manifestation", which also included demonstrations at Windscale and Sizewell. In 1976, stimulated by the Green Bans Action Committee (Birmingham), SCRAM Lothians made attempts to establish a relationship with the unions. While

progress was at first encouraging, including the SCRAM exhibition at the 1976 miners' gala in Edinburgh, a long-term relationship with the labour movement was not established. This may in part have been due to the general lull in SCRAM activity following the announcement in March 1976 of a two-year delay in the Torness programme, for changes in management and design.

In 1977 SCRAM activities included the filing of an objection at the Windscale Inquiry, fundraising for the Windscale fighting fund, and organising a public meeting in Edinburgh and a day of action in May. The day of action consisted of a mass rally at Loch Trool organised by SCRAM SW, a peaceful occupation at another proposed reactor site at Stake Ness, Aberdeen, and the dumping of dustbins outside electricity showrooms in Dundee. A demonstration in Edinburgh was attended by representatives of groups from Galloway, Glasgow, Dundee, Fife, and Aberdeen. Eight dustbins, and letters calling for a halt to the nuclear power programme in Scotland, more emphasis on conservation and development of alternatives, were presented to the Secretary of State for Scotland, and anti-nuclear street theatre was performed in the city centre. Coverage was achieved on BBC Radio Scotland, and several Scottish papers.

The inadequacies of the organisation and results of the day of action led to proposals to build SCRAM into an organisation with a formal structure which would be able to involve more people and "unite the fragmented opposition" against nuclear power. A steering committee, elected at an open meeting, drew up a constitution which was adopted at a later general meeting, when an executive committee was elected. The EC consisted of a chairperson, vice-chairperson, secretary, treasurer, and five others. In the constitution there was provision for honorary president and vice-presidents, but these positions were never filled.

The objectives of SCRAM were established as follows:

" (i) To inform the public of the present and proposed nuclear developments and their social, political and environmental implications.
(ii) To oppose such developments.
(iii) To press for a long term energy strategy based on conservation and on the use of renewable resources."

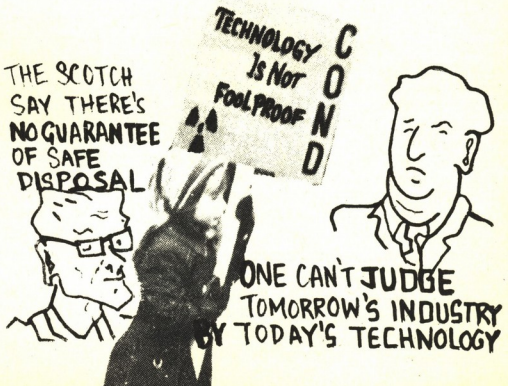
In July 1977 SCRAM took part in the action against the import of uranium from Australia, initiated by Greenpeace in solidarity with Australian trade unionists and environmentalists. A picket of the Australian Consulate in Edinburgh was organised, and the occasion was used to draw attention to the plans to mine uranium in Deeside and Orkney.

Planning for a weekend occupation of the Torness site in May this year, and campaigning for a new inquiry into Torness, were begun during the summer 1977. In September it was realized that originally permission was given to build an SGHWR only, but as it seemed likely that this design would be abandoned, the Secretary of State would have the option to call another public inquiry. SCRAM's arguments for a new inquiry were summed up in the document "Torness — the need for debate" — presented to the Secretary of State in March 1978. The Secretary of State's rejection of the demand was announced in late May, after the occupation.

SCRAM's efforts to force a new public inquiry were half-hearted due to pessimism as to both the likelihood and the value of getting one. If SCRAM had been serious about campaigning for a new inquiry, far more effort would have been put into building support for this demand in the communities in the vicinity of Torness, and in the labour movement throughout the Lothians, so that the likely rejection of the demand would be met by uproar. A weekend occupation could then have followed later in the year whether a new inquiry was forthcoming or not. As it was most people around SCRAM put most of their energy into organising the occupation, the date for which was fixed because it would be warm enough to camp, but far enough away from exam time to attract students. Shortly before the event, it became a festival rather than an occupation.

In late 1977 attempts to organise meetings in the vicinity of Torness achieved little but closer to the event 50 locals attended a public meeting in Dunbar addressed by Rob Edwards of SCRAM, and Dr Loerning of Edinburgh University. Later a slide show was taken around village halls, and during the week before the event an information caravan was set up in Dunbar and the area leafleted.

Before the occupation there was an increasing concern among people around SCRAM about the way that a few people seemed to decide policy, while meetings to organise the occupation, to which a lot of new people were coming, consisted more or less of deciding who would do what. Following the occupation, however, decision making was carried out by general meetings, and the activists split up into groups to tackle particular tasks. The new SCRAM constitution adopted at the AGM of 5th July formalises the essential features of this arrangement. The objectives of SCRAM remain the same, except that item (ii) is now "to oppose by all non-violent means the further developments of nuclear power in Scotland and elsewhere". The new constitution makes provision for membership at 50p per year, branches (such as SCRAM SW), sub-groups (responsible to fortnightly general meetings), and a working group to carry out decisions of general meetings, consisting of delegates of sub-groups, the treasurer and vice-treasurers, press officer, and secretary (a post for which there was no nomination). It has yet to be seen how well this arrangement will work, but now there is at least far more opportunity for participating in decision and policy making.



Sub-groups so far established include groups with responsibility for fund-raising, publicity/exhibitions, festivals, planning non-violent direct action, co-ordinating, producing the energy bulletin, and for campaigning among graduates and students in the East Lothian area, and in the labour movement.

The East Lothian group was formed to tackle the problem of involving people from the Torness area in the campaign. It has achieved a fair degree of success, for starting with meetings with known local sympathisers to SCRAM, it has now spawned an autonomous local anti-Torness campaign. They organised a tractor demonstration from Dunbar to the Royal Show ground in Edinburgh on the first day of the show in June. Twenty-seven tractors took part covered with anti-nuclear posters and stickers and were driven by farmers and other locals. Leaflets were given out at the show ground, and the event achieved considerable publicity locally. The group also organised a public meeting and exhibition in July in order to counter a week-long public relations exhibition.

The problem of winning support locally is that of many other campaigns against construction projects in areas where jobs are hard to come by and/or badly paid – local workers welcome the development as a source of well-paid jobs, and local traders welcome it as a source of custom. How much success the new local group will have in tackling this problem remains to be seen, but one option open to them, and/or the SCRAM East Lothian group, would be the formulation of an "alternative development plan" for the area to campaign around.

The group of trade unionists who got together after the occupation to form the labour movement group is currently calling itself "Trade Unionists Against Torness" and is organising a conference on nuclear power and the labour movement for late October. This, it is hoped, will include a film, information session, debate with pro-nuclear unions, and discussion of tactics. Some of the proceedings may be written up as a report.

Besides the changes in the structure of SCRAM which have occurred since May, other developments have been the formation of the Torness Alliance, and the continuing emergence of a strong feminist influence within the movement.

The Torness Alliance is made up of about 150 groups which signed the Torness declaration which was read out and left on a notice-board on the site at the end of the Torness occupation. The declaration commits signatories to taking "all non-violent steps necessary to prevent the construction of a nuclear power station at Torness". About a third of the signatories are FoE groups and the rest consist of Conservation Society branches, CND and pacifist groups, community newspapers and magazines, student unions and environment groups and Liberal groups. One union branch signed, COHSE East Fortune Branch, and one soicliast group, Aberdeen IMG. Several meetings of the Alliance have now been held and a newsletter produced. A one or two week occupation of the Torness site, consisting of a relatively small number of people sponsored by their affinity groups is planned for September.

Organisation of the Torness Alliance is along similar lines to that of the American Clamshell Alliance, with affinity groups and Non-Violent Direct Action (NVDA) training in sessions led by NVDA trainers. Whether or not this type of organisation is suitable for this country, where we have a more political trade union movement, seems to have been given little consideration. NVDA sessions employ mysterious concepts and bear a marked resemblance to Encounter groups, and are certain to alienate many on the left.

The involvement of the organised left in the Alliance could help increase the political awareness of other participants, as well as starting a useful debate on tactics. The Alliance's awareness of the need to plan demonstrations carefully, and to discuss tactics among participants beforehand is of course sound, although the ideal of 'no violence ever' may be unrealistic.

Wanted: Action

The most obvious opportunities for intervention by the organised left in the anti-nuclear movement in Scotland are in the Trade Unionists Against Torness group, in continuing the union work initiated by SCRAM SW, and in the Torness Alliance. In the first two instances the major role of the organised left will be in carrying the campaign into the labour movement while in the third it will be in carrying socialist ideas into the anti-nuclear movement. There are numerous problems to tackle of course, such as the undesirable possibility of splitting the labour movement on nuclear power geographically, alluded to in this article.

The organised left is now beginning to take issues connected with science and technology seriously, and to re-evaluate the traditional socialist view of science. With the emergence of the anti-nuclear movement, there is now plenty of opportunity to begin translating the developing new theory into practice.

Dave Smith, Edinburgh Science for People

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1 Here could be cited SERA's *Meet your new industrial relations manager.*
2 *A promise to move mountains – the search for uranium on Deeside.* A report by Friends of the Earth (Aberdeen).

Transportation of NUCLEAR MATERIALS

The nuclear fuel cycle involves the movement of various types of nuclear material around the UK – uranium ore from the docks to fuel enrichment and fabrication plants (Springfields, Capenhurst); new fuel rods on their way to our twelve operating nuclear power stations, plus the various research and prototype reactors (e.g. Dounreay); irradiated 'spent' fuel rods from power stations to the Windscale reprocessing plant; and high and low level wastes (eventually) to their final resting places (as yet, in the case of high level wastes, undetermined).

These materials are transported by road and rail in heavily shielded casks or flasks designed to prevent release of their contents, even following a major accident. Plutonium has also been transported by air – between Windscale and Dounreay.

If we opt for a Fast Breeder Reactor programme the volume of such materials in transit is likely to increase, since the basis of the Breeder reactor is the production of plutonium in the core of the reactor which has to be separated out, for subsequent use as a fuel, at a reprocessing plant, like Windscale.

It is conceivable (but expensive) to provide reprocessing facilities locally but much more likely that this will be done centrally at Windscale. For one thing this makes the security problems more tractable. However it does imply increased transport of plutonium materials around the country. It has been suggested that in order to make this material less attractive to terrorists it will be specially irradiated. One problem with this is that it would greatly increase the handling and safety problems faced both by transport workers and workers in nuclear plants.

The UKAEA, in its evidence to the Flowers Commission, outlined a FBR programme that would involve the commissioning of a total of 33 GW of FBR capacity by the year 2000 – rising to 370 GW by 2030 making, together with conventional thermal reactors, a total of 426 GW by 2030.

Although this programme has since been drastically cut (to a total of 40 GW by the year 2000) the UKAEA is still keen to press ahead with the FBR – initially aiming to construct a single fullscale 'Commercial Fast Breeder' (CFR-1) – following on from the two FBR prototypes developed at Dounreay.

According to Flood & Grove-White (Nuclear Prospects) the CFR programme would probably require roughly 430 tonnes of Mixed Oxide Fuel (MOX) annually, incorporating some 84 tonnes of plutonium oxide. Depending on how this was shipped, this would imply around 1720 movements annually, in 70-80 tonne armoured casks containing 250 Kg of MOX *or* 750 movements of standard 4te containers, each containing 580 Kg of MOX.

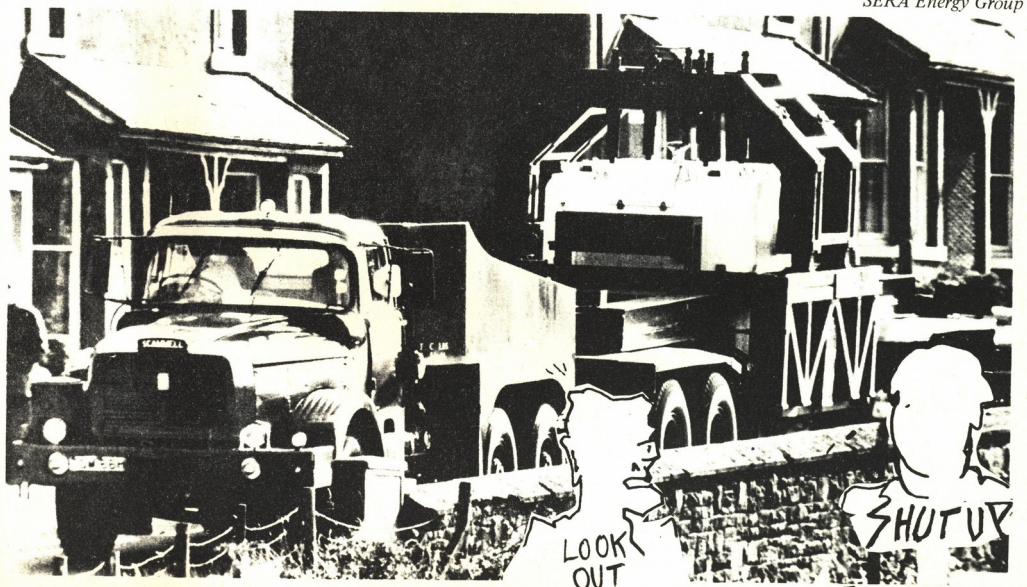
A number of transport accidents have already occurred with MAGNOX/AGR operations – for example several derailments of trains carrying spent fuel between Barrow and Windscale and the discovery of contamination on the outside of an empty cask used for shipping fuel rods between Windscale and the Wylfa power station (December 1976). Some of the incidents are almost surreal. In the summer of 1975 an unmarked wagon with spent fuel from Wyfa was found in a marshalling yard at Holyhead while a ship due to transport nuclear waste was recently holed by a submarine. In November 1975 the local section of the CSEU covering workers in the Barrow docks called for a ban on handling incoming Japanese nuclear materials, but this was withdrawn due to pressure from GMWU members working at Windscale.

Stringent safety and security precautions are taken to ensure that active materials are not released, even following major accidents (the casks are designed to withstand a 30 ft drop on to concrete and exposure to 800°C for 30 minutes). But even so, as indicated, errors can occur and could put road or rail workers – and the community – at risk. It is vital that these risks are understood before a commitment to an FBR programme is made.

The accidental breaking of a container, although exceedingly unlikely, could lead to widespread contamination – particularly if associated with a fire or explosion (e.g. following a collision with a petrol or LPG tanker). Several thousand deaths could be expected. Routine minor incidents are much more likely – and could lead to contamination of vehicle crews, dock workers etc. which might not be detected immediately.

A further problem is security. As already mentioned, some nuclear materials would be prime targets for terrorist groups wishing to secure fissile material for bomb construction. The UKAEA's armed police force is responsible for security, but vehicle crews and railway workers are clearly also exposed to possible violence. The situation in respect to security parallels that applying for bullion shipments. And, of course, the security requirements might make it difficult for trade union safety representatives to obtain information on what was being carried.

SERA Energy Group



Radioactive fuel being transported in a steel "coffin" from Windscale

REVIEWS

***The Story of Nuclear Power*, E.H. Childs, illustrated by Robert Ayton (Ladybird Achievements Book, Series 601, 1972)**

This children's educational booklet, cheap as it is at only 24p, nevertheless typifies most of what is wrong with science education in this country. It claims to tell the story of nuclear power, yet only tells the half of it. It blatantly avoids mentioning *any* of the problems, the controversies, the dangers associated with nuclear power and unashamedly omits all reference to past accidents, protest movements, loss of human life (accidental and otherwise). Radiation hazards are dismissed in one sentence which states casually that one form of energy given off when fission occurs is "the radiation of very penetrating rays which can harm human tissues and cells". Perhaps not surprisingly, therefore, *none* of the workers inside the plant are ever shown wearing protective clothing, in *any* of the pictures!

Incredibly, the atom bombing of Hiroshima and Nagasaki is glossed over with: "The world suddenly awoke to an awareness of this great new power when an atomic bomb was dropped on Japan, by the USA on August 6th, 1945. The press announced that the Atomic Age was born." On the facing page is a painting of a beautiful mushroom cloud of yellow and crimson smoke billowing upwards into an azure blue sky, veritably a wondrous sight to behold. Not a hint, not a murmur, of the agony, of the horror, of the obscenity symbolised by that picture, of the gruesome reality just out of sight. So our children may continue to have sweet, untroubled dreams at night and grow up into responsible, well-adjusted adults (ready, no doubt, to answer the call of duty if need be, and drop other bombs on other people). The atomic bomb is presented as just one more "achievement" along the path of scientific progress, and this approach, of course, typifies the whole book.

Scientists are throughout portrayed as benign-looking, daddy-type men in white lab coats and indeed, in the author's own words, "This book is mainly about the *wonderful* progress in *man's* knowledge of the fission process, and its contribution towards nuclear power" (my italics). The only woman portrayed in a technical setting is sitting at a keyboard in a computer centre, and young readers could be forgiven for thinking that she might be the typist. Otherwise, woman's work is clearly shown to be at home, in the kitchen, at the stove. Needless to say, it is a typical *nuclear* family with two children shown watching

Nuclear power stations get bigger and better

An artist's impression of an agro-industrial complex in a desert area

One day it may be possible to have plenty of fresh water, and grow an abundance of food in the deserts of the world, particularly if they are near the sea. This could be done by using the heat from nuclear reactors in a desalination process to convert sea water into fresh water. The heat could also be used to produce electricity as in the nuclear power station; it is almost certain that nuclear rocket engines will be needed.

Another interesting use for a nuclear power plant is in a ship, where it is reported to replace the engines.

Further possibilities

No doubt it will not be long before other nuclear-powered merchant ships sail the oceans of the world.

Perhaps one day cargo and maybe even passenger submarines propelled by nuclear engines, will travel the depths of the oceans. Maybe hovercraft, if ever used for ocean crossings, could also be propelled by nuclear engines. Nuclear-powered 'air tugs' shuttling their pay loads across the upper atmosphere are yet another possibility.

Another use for nuclear power in space is [illegible] of electricity.

television, and strange but comforting, we are shown the same nuclear family of four sitting around the fire in their (no doubt suburban) cave, illustrating "Early man's source of heat . . .". Again, young readers could be forgiven for thinking that all the world lives, and has *always* lived in nuclear families of one father, one mother, and preferably one son and one daughter.

The "need for nuclear power" is argued as follows. The basic premise would seem to be that: "A tremendous amount of power . . . is required to enable life, as we know it, to continue." The argument continues with: "Any additional means of producing power economically is welcome, particularly for generating electricity, . . ." Finally, we are informed that: "Nuclear energy . . . is well suited for the generation of electricity." Thus the *inescapable* conclusion for the naive reader is that we obviously *must* have nuclear power. Nowhere in the book are any opposing views mentioned, nor indeed is the existence of any opposing views hinted at. And just in case any tiresome child wishes to question what is so very wonderful about life "as we know it", that we must needs strive to enable it to continue thus, we are told that, "if enough power were made available, the living standards of people all over the world could be greatly improved." Each of these statements begs obvious and vital questions which the author has chosen to ignore. So the young reader is gently conned into accepting that nuclear power is beneficial, is necessary, and is in any case *inevitable*; for as the inside front cover tells us, "As our supplies of fossil fuels . . . become used up, our power-hungry world will depend more and more on nuclear energy." So our future dependence on nuclear energy has become, in this book at any rate, just another of the facts of life.

To the book's credit, however, the technical explanations of nuclear fission and the workings of a nuclear power reactor are reasonably well handled and clearly illustrated. As an educationalist myself, I have always argued that it is both unethical and pedagogically unsound to teach about science or technology divorced from its social context. Having read this book, however, I can't help thinking ruefully that, in this case, it might have been less dangerously misleading to the young reader if the author had left out this particular pseudo-social context altogether.

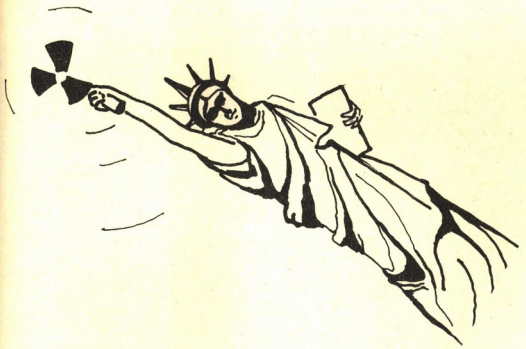
Arye Finkle

REVIEWS

The Nuclear Axis, **Zdenek Cervenka and Barbara Rogers, published by Julian Friedmann Books. Price: £7.95 hardback.**

West Germany and South Africa have secretly developed their own nuclear weapons capability. With West German technological backing, South Africa has built nuclear facilities that are outside NATO's controls and outside the international safeguards system. *The Nuclear Axis* exposes the clandestine collaboration between the two countries, with side lights into the unsavoury world of multinational nuclear big business.

If anyone doubts the utter vanity of the 'Atoms for Peace' initiative, this book will quickly disillusion them. *The Nuclear Axis* is an unpleasantly clear revelation of the intimate relationship between nuclear energy generation and nuclear proliferation. Nuclear power seems to corrupt absolutely. West Germany's was hailed as an example of a peaceful nuclear programme. Not altogether out of choice, however; West Germany is forbidden, under the Brussels Treaty, to build nuclear weapons. But it is evident that the less acceptable uses of fissile material have proved as compelling for the Bundeswehr generals as they have for the commercial interests. If you have the technology, apparently the urge to use it becomes irresistible.



Further to this, the book draws attention to the outstanding failure of the Nuclear Non-Proliferation Treaty, and of any attempts by NATO and the International Atomic Energy Authority to establish some kind of international control. Uranium and plutonium are little more accessible to effective control than heroin, for example . . . in fact a good deal less so, since for strategic reasons some of the Controllers may feel disinclined to exercise their small degree of influence. There has never been any question of observing the Non-Proliferation Treaty, but it appears that nobody is paying very much attention to the letter either: diplomatic bags have been leaving West Germany on their way to Pretoria bulging with uranium enrichment hardware; Israel has been smouching material from the USA, France and Britain with the collusion of the companies involved, and often of the Governments too. When Iran, one of the world's chief oil exporters (and arms importers) buys French and German nuclear expertise, you don't have to read his veiled threats in the press to know that the Shah is not just interested in domestic heating.

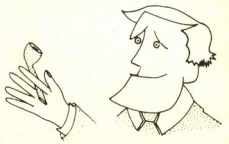
The Nuclear Axis is based on a scoop of letters, memoranda and telegrams stolen from the South African Embassy in Bonn, although its scope is broader than this might indicate. It would certainly make a good source book (an appendix contains reproductions and selective transcriptions of thirty of the stolen documents), but it is not cheap, and unless it appears in paperback, you will probably have to order it through your library.

Jonathan Sugden

Tony writes to you

Dear "Homicidal",

"Having trouble reconciling the fact that while public money is spent urging you to "Save It", more public money is spent urging you to buy more electricity?"



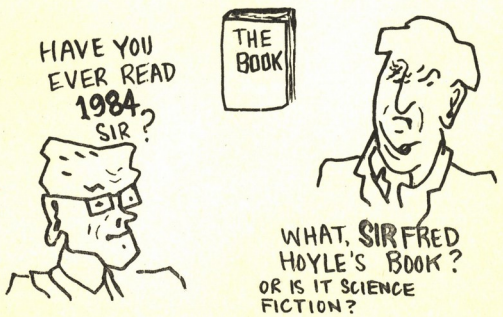
"Can you still not understand how those who in the past have called the AGR programme "a catastrophe we must not repeat" are now able to order more AGRs?"

"The solution to both these problems and many others lies in a whole new attitude of mind."

DOUBLE-THINK ELECTRIC

SCRAM Energy Bulletin. **10p. Scottish Campaign to Resist the Atomic Menace, 2 Ainslie Place, Edinburgh.**

In Science for People no. 37, we reviewed issue no. 1 of SCRAM Energy Bulletin, recommending it, but also criticizing it for lacking in strategy and direction. We received a really positive letter from SCRAM following that review, thanking us for the mention – a few people had contacted them as a result – and accepting our criticism in the kind of open-hearted, constructive manner that some rigid leftists preciously clutching their theories would do well to learn. Since then the Bulletin has taken shape, is packed with sturdy information and has developed a down-to-earth style of presentation peppered with some good ironic humour. Heartily recommended for anyone wanting to keep abreast of what the nuclear industry's up to and where the opposition's at.



REVIEWS

Hazards of Nuclear Power **by Alan Roberts and Zhores Medvedev. Spokesman 95p. 73 pages.**

Alan Roberts' analysis of the politics of nuclear energy provides us with a much-needed overview of the political economy of nuclear power. Over the past few years there has been no shortage of books and articles on the environmental problems, but, with the exception of the articles in *Science for People* (no. 33) and the US *Science for the People* (May 1976), there have been few critiques from the left.

Roberts argues that there is more to the growth of nuclear power than just a hunger for profit: indeed, at least in its early stages, nuclear technology has proved to be a disaster financially. He quotes a report by Nuclear Engineering International in 1974: "the big industrial concerns have not entered the business for quick profits – indeed, most of the companies that have entered the nuclear business around the world have been shaken to their foundations by losses on early projects and few can see dramatic profits in the future. For the most part the position of industry is that long term direction of energy supply is going to be increasingly in the direction of nuclear power and therefore for the wellbeing of their company they must establish a foothold in this sector of the business in spite of the heavy initial costs."

The energy companies are equally concerned with long term security, monopoly and control. As Roberts puts it: "The interests of the capitalist class are not to be conceived as simply the making of a fast buck. They include also the preservation of a structure of industry, which will enable the capitalist system to continue."

That's not to say that profits can't be made eventually. Governments worldwide have been more than willing to subsidize early losses and underwrite research and development costs. But the firms can only take advantage of these provisions if they can have guarantees of large-scale programmes of nuclear construction: nuclear technology only becomes profitable when units can be mass produced. So some firms are opting out, while others, like Westinghouse, try to corner the market. The trend to economic concentration and monopoly is clear.

At the same time, in some countries, doubts about the economic viability of nuclear power, coupled with pressure from environmentalists, have caused governments to cut back programmes. The costly delays and modifications forced on the US utilities by harassment from the environmentalist movement has had an effect. Plant orders have fallen from a peak of 38 in 1973 down to four in 1977.

Some commentators argue that nuclear power is just too expensive and that private industry cannot afford the huge sums required: Roberts points out that by 1985 the US nuclear industry would, if it tries to meet current targets for power station construction "absorb over 50% of gross US capital formation over the next decade". Few private investors would want to risk their money on this technology even given government guarantees. Like the energy monopolies, they prefer to invest in more profitable areas, such as resource and commodity speculation.

But despite the economic problems, the race to nuclear power still continues in many countries – particularly France and Germany. The Soviet Union also has a fairly large nuclear programme, with some 25 plants under construction or on order – though that's only about half the number planned for France. Although Roberts says that the USSR's programme is "insignificant in comparison with that of the USA, which is some 15 times greater in power output", he is no apologist for the Soviet regime. He is well aware that "the absence of genuine public discussion on the issues involved in nuclear power has allowed the Soviet nuclear industry to 'solve' its disposal problems with a breathtaking lightmindedness: high level radioactive wastes are simply pumped under pressure into deep permeable zones . . ."

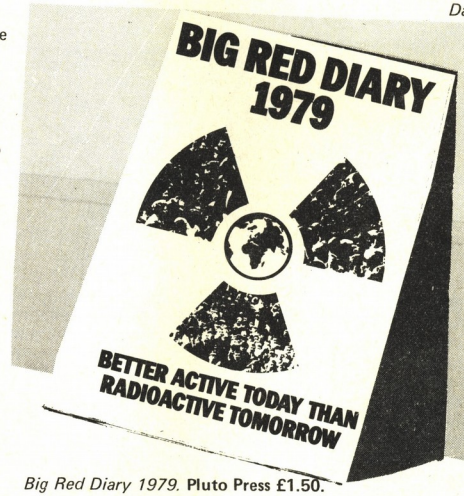
Zhores Medvedev's section of the book provides an account of a nuclear waste storage accident that allegedly occurred in the Urals 'at the end of 1957 or beginning of 1958' which might be thought of as the direct result of this 'breathtaking lightmindedness'. According to Medvedev, 1000 square miles were severely contaminated following an explosion. He attempts to prove his claim by collating research material from Soviet biological and zoological journals. It's an interesting exercise in detective work, which when it appeared in *New Scientist* (30 June 1977) caused a furore – with Sir John Hill of the UKAEA stoutly denying that any such accident could occur.

The political message is that technocrats whether British or Russian tend to talk the same language – bland assurances that all is well.

It's good that this book implicitly makes the point that nuclear power is no safer under the Soviet regime than under capitalism, though that doesn't answer the question that some on the left will ask: would it be possible to have safe nuclear power under genuine socialism? Many on the left are saying no: nuclear technology is a technology designed for and by capitalism. Quite apart from its inherent dangers for workers, the community and the environment, it reinforces the centralisation tendencies within capitalist and state capitalist society and it would be difficult to avoid this in *any* society. And it is inordinately expensive, a bad investment in terms of creating jobs, whereas there are viable alternatives which are less capital-intensive.

As Roberts makes clear, the struggle against nuclear power is an important one, in that it opens up broad political questions as to what sort of society we want. So far most of the running has been made by environmentalist groups. But as SERA has pointed out, nuclear power also has immediate implications for the labour and trade union movements – in terms of the impact of security restrictions on trade union rights, the problem of health and safety and industrial strategy generally. It is time that the left got involved in what could well be a key political issue.

Dave Elliott



Big Red Diary 1979. **Pluto Press £1.50.**

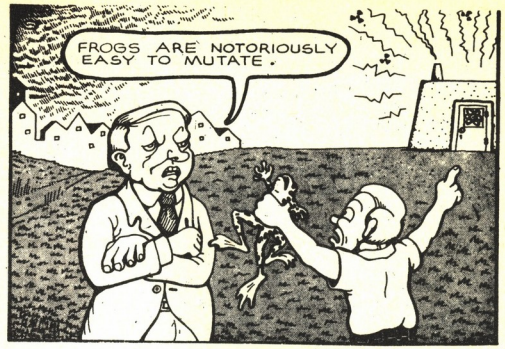
This year when a small group of lefties simultaneously pull out their Red Diaries to set up yet another meeting it will be a little yellow booklet with the message on it: 'Better Active Today than Radioactive Tomorrow'. Yes, this year's diary is on nuclear power and has been produced by people grouped around *Undercurrents* magazine. It's good in spite of my first snide sentence (I always buy the Red Diary myself!). There's quite a lot of information about the history of nuclear power, uranium mining, radiation, accidents, vetting and civil liberties, trade union rights, alternative energy sources and the structure of the nuclear industry. And of course there's 'nuclear events' spread throughout the diary. A good short introductory guide to nuclear power and a diary as well. Also it's good to see that this year, you don't have to write over pictures to fill in your entries as happened in the 1978 Food Diary.

Irwing Garden

REVIEWS

FROG LEGS

THE AMSTERDAM NUCLEAR RESEARCH INSTITUTE DUMPED ITS NUCLEAR WASTE IN A DITCH. DR. D. HILLENIUN OF THIS INSTITUTE REPORTEDLY FOUND FROGS IN THIS DITCH WITH EXTRA LEGS AND OTHER MUTATIONS. SIMILAR REPORTS OF MUTATION HAVE APPEARED IN THE U.S., JAPAN, AND CANADA.



ILLUSTRATED BY LEONARD RIFAS

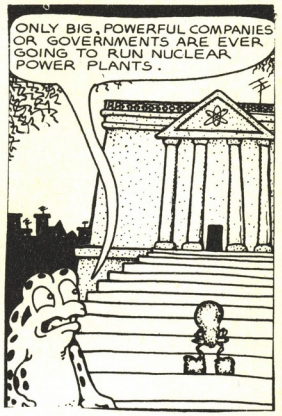
All Atomic Comics. **$1.00. Educomics, California. Available in this country from Julian Boles, 112 Fellows Road, London NW3. 01-586-3669.**

"When I started working on this book in late 1974 I thought I was going to do a 'balanced' discussion of nuclear power presenting both sides. I decided against this.

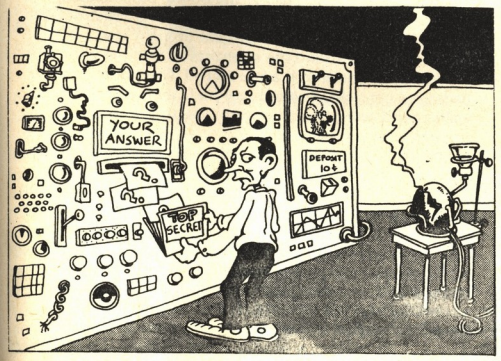
"The arguments in favour of nuclear power are well-known and cleverly promoted in multi-million dollar advertising campaigns. The arguments against nuclear power are not as well-known and are unable to afford expensive promotion.

"What is more important, however, is that the arguments for nuclear power are often false, doubtful, or misleading, while the arguments against nuclear power raise very serious questions.

"Some may think that it is irresponsible for me to put an argument which casts doubt on nuclear power in comic book form. I'll admit that the limitations of space have kept me from presenting the arguments as fully as I would like but for readers who desire more supporting evidence I have supplied a bibliography. The pro-atomic power comic books which the nuclear industry has sponsored have often been outrageously irresponsible in their simplistic advocacy of a new and highly questionable technology."



So saying, Leonard Rifas, with the aid of a brilliant cartooning talent, glides through the history of and case against nuclear power, leading through to the alternatives, in the most digestible form seen yet. The main text is delivered by a three-legged frog and is interspersed with well-illustrated 'Fun facts to know and tell about nuclear power' (see samples). The comic is rounded off with a page each on 'Is nuclear power cheap?' and 'Does nuclear power create jobs?' Although, as Leonard points out, this work is not an in-depth critique of the nuclear industry, there's nothing flippant about it – a passionate commitment to communicating serious ideas fair shines through the intensely humorous presentation. If you're in the teaching racket, or just want to convince a few mates without boring the pants off them with heavy technical discourses, spread this little number about.



REVIEWS

Energy or Extinction? — The Case for Nuclear Energy, **Sir Fred Hoyle. Heinemann 1977, £1.50.**

We might have expected something better from Sir Fred, but in his *Energy or Extinction? — The Case for Nuclear Power* published recently he really goes to town to counter what he labels the hysteria of the anti-nuclear lobby with a new and rather nasty brand of hysteria of his own.

Friends of the Earth and other environmentalists are marxist subversives and Kremlin-inspired dupes, he declares. 'They' ('the Russians') have most of the world's coal reserves and want to get control of all its other energy resources. Hence they expand their navy, 'exploit the many political troubles to which the continent of Africa is endemic' and, in order to control the 70% of the world's oil that lies in the Middle East, and the tanker routes that bring it to the West, they 'set their many vociferous friends throughout the world howling and baying for the blood of Israel and South Africa'. And finally, because nuclear power — the one 'fly in this otherwise smooth ointment' is the saviour of Western Democracy they set up the anti-nuclear lobby — following 'right to the last letter their Kremlin-inspired instructions'.

Poor old Fred over-reaches himself with this however, and every copy of the book now sold has an insert to 'apologise unreservedly' to all friends of the earth who are 'not motivated by or manipulated for political ends by the Soviet Union or any other government, organisation, or person'.

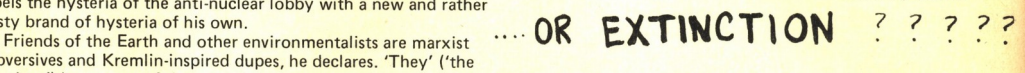
This really is a pity for (in spite of the terrible grammar) the book does contain some telling points — although you have to dig quite a way to find them. After a few pages explaining just what energy is and why it is so necessary he launches in what he clearly sees as a demolition job on the case for alternative energy sources. First, he projects an estimated annual requirement for energy for a 'politically stable world' (!) of six times the present level, an estimate that is based on the assumption of a world *per capita* energy consumption of almost three times the present level in Britain. Then he (correctly) calculates that to supply this entirely from 'alternative' energy sources is impossible. World wave power, for example, would require 600,000 miles of coastal boom (over twice the distance from earth to the moon), and to satisfy UK requirements by wind power would require 20 million windmills, covering over half the UK total land surface. Having disposed of alternative energy (and rejected fossil fuels in passing), he concludes that the projected world energy demand can only be met by nuclear power.

Ignoring the inevitable commitment to fast breeder reactors that any large increase in nuclear power generation entails (and putting his shirt on the relatively new and untried 'slow' breeding from Thorium 232 in reactors of the CANDU type) he juggles with figures to 'prove' that the risks of all-nuclear generation are equivalent to smoking six cigarettes, being one-third of a pound overweight, or driving three miles extra per year by car, a loss of life expectancy of the 'average American' of 1.2 hours.

What emerges clearly however, is that Sir Fred's double-talk on the motives of the anti-nuclear lobby is matched only by his double-think on its arguments. Emphasising the obvious — that alleviation of the grinding poverty and hardship in which most of the world's population lives requires an increase in *per capita* consumption of energy, he assumes a (quite unjustified) corollary of a vast and inevitable future increase in energy *production*, quite ignoring the gross waste of energy necessary and inevitable under capitalism. He ignores too the qualitatively different *nature* of nuclear risks, both from explosion and nuclear waste contamination, their long-term effects, and the inability of both individuals and future generations to avoid their consequences. He ignores too, the fact that nobody seriously advocates one or all 'alternative' energy sources as a complete solution to our energy requirements, only that such sources together with conventional fuels especially coal, and energy conservation, with a planned development of 'sources for courses' are an essential part of the 'mix' of any rational energy policy. Most importantly, of course, he ignores the *political* dimensions of the debate — probably because this is an element which escapes his blinkered myopia. The issues of course are not just those of 'which technology' but those of *democratic control*, of *accessibility*, of the *nature of society*, which are intimately related to the question of our energy options, both for the 'third world' and for working people in the industrialised nations.

But these are issues of which Hoyle knows little — and of which from his book he would apparently wish us to know less. If his command of language were better the book might be an entertainment — it is certainly no education.

Richard Clarke



Brighter Than a Thousand Suns — the moral and political history of the atomic scientists **by Robert Jungk, Penguin Special, 1960. 3s.6d. (sic!)**

This book, although written in 1956, still makes compulsive reading today. On one level, it is a gripping and spine-chilling account of the conception and development of the atom bomb by a team of brilliant and dedicated scientists and of its eventual role in the wanton destruction of two densely populated Japanese cities. On another level, it tells the story of refugee mathematicians and physicsts, many of them Jews, fleeing from Nazi persecution in Europe of the thirties, trying to pick up the broken pieces of their lives in Britain, Scnadinavia and America. Mortally afraid lest Hitler should become the first to possess an atom bomb, we see them become ardent advocates for the construction of a bomb by the allies. And on yet a third level, it describes the gradual concentration and organisation of thousands of nuclear physicists, mathematicians and engineers, into a large-scale production team whose labour becomes gradually appropriated and controlled by the U.S. military machine.

We learn of the relief felt by the allied scientists as the European war draws to a close and they discover that their German counterparts had not, in fact, been engaged in the production of an atom bomb after all. And we learn how, for some of them, this relief turns to incredulity and then to horror as they suddenly realise that the army, with the connivance of some of their colleagues, is planning to use the bomb against a Japan that is already on the brink of collapse.

This, surely, was the historical crisis-point for the scientist with the social conscience — the point-of-no-return for those who had hitherto believed in the efficacy of social responsibility on the part of the individual scientist! Indeed, it is strangely naive that even the liberals among the motley collection of radical scientists who founded the BSSRS almost a quarter-of-a-century later in 1969, should have considered that "social responsibility in science" could still serve as an adequate formula for scientists' action in the 70's.

Jungk records how Leo Szilard made one last futile attempt to prevent the use of the bomb, by collecting signatures from the scientists involved in its construction. The military director of the project thought it would be undiplomatic to forbid the scientists to sign the petition instead, he declared it a top secret! The laboratory had become a barracks. The military had "erected invisible walls round every branch of research, so that no department ever knew what any other was doing". Secret papers could only be transferred from one department to another under armed guard, and the director derisively declared: "Unfortunately, we cannot spare any troops for the protection of this petition. Until we can do so, it must be kept locked up."

"Big" science had come of age. The scientist had become a proletarian worker. Strangely though, over thirty years later, with many scientists rubbing shoulders with blue-collared workers in the dole queues, not everyone would yet appear to have got the message.

Arye Finkle

REVIEWS

Meltdown, **Ray Kytle. Panther 1978.**

Action packed. Pluto-drama. Trusting physicist has doubts on Fast Breeder safety. Reactor blows up. Read how. Sex on p23ff. Natural delivery of baby, chapter 5. Mutants. Revenge. Commerce. Day of the Jackal goes nuclear. "Compelling, shocking and totally plausible" – back cover. "Nearly recommended" – SfP.

seguridad nuclear

Sanity. **10p. Campaign for Nuclear Disarmament, 29 Gt. James St, London WC1.**

Reading *Sanity* brings mixed feelings. It's great to know that CND, who were a solid part of the dynamic upheavals we were brought up on in the '50s – rock&roll, protest, teds, beatniks and banthebomb – are still alive. But with that goes the knowledge that not only did the bomb never get banned, it has in fact multiplied in quantity and sophistication. (By 1977, the USA alone had 8,500 'strategic' nuclear warheads, each with a far greater explosive power than the bombs which destroyed Hiroshima and Nagasaki. Not to mention the tens of thousands of 'tactical' nuclear warheads to be used over shorter distances.) Well, *Sanity* meticulously exposes this appalling madness and provides facts and figures detailing the crazed excesses of the world's military powers. But in the final analysis, it seems to still believe that you can reason with governments, armies and anyone else whose power is propped up by their capacity to murder people who get in their way on a scale that defies all reason. Perhaps that's why, in spite of CND's continued existence, the bomb is still flourishing.

Garyanne Mordon

Energy Policy Document. **Communist Party Science and Technology Subcommittee.**

In a brave and comprehensive discussion document on energy policy the Science and Technology subcommittee recommend either a low nuclear power option or no nuclear power option. These conclusions are based on consideration of reactor need, safety, and (un)economics. Also "if we are to have nuclear power the whole movement should exert pressure through the trade unions to ensure that waste disposal problems are solved before any further reactors are built. (With government approval of Windscale) the question of disposal assumes even greater importance. There is as yet no process which has been proved at commercial size either technically or economically." Also included is a refreshing and well-informed discussion of alternative energies, the future of the fuel industries and a suggested overall energy policy, to be subservient to an (unelaborated) social policy. Fine.

Puzzling, though, is the skating over the implications of nuclear police (yes they do cost a lot of money). Also there's no hint of the undesirable strengthening of the corporate/military/administrative bloc that must accompany nuclear power. No mention either of the syndicalist potential of some alternative technologies or the co-operative/district control possible with others. The best politics that are mustered are National Independence through a multiplicity of technologies, and nationalise the energy sector. No suspicion either that ex-chief scientist of the Department of Energy Dr. Walter Marshall (also of UKAEA) is less than impartial. Unless the views are more politicised, there's no earthly reason why these competent technological analysts shouldn't be co-opted onto the Energy Commission.

Dai Rose

Ecotopia, **Ernest Callenbach, Pluto Press, £1.20 paperback, £3.60 hardback.**

"And what if terrorists should ever get the bomb?" They did. In 1980 a feminist secessionist group snatched nuclear material, and claimed to have mined New York and Washington. Using this as a threat, they managed to pull Oregon, Washington and Northern California out of the Union to establish what they call a 'stable state' economy. Their aim is to live in harmony with the planet rather than to live over and above it. Their land is one of clean air, biodegradable plastic, recycling, public transport, bicycles, a falling population, and production to meet real needs instead of overproduction to keep cash moving (the 20 hour week was one of Ecotopia's earliest and most successful experiments). It is a fundamental of Callenbach's logic that you cannot swing together with Mother Nature unless you swing together with your sisters and brothers; the stable state life is not, for example, compatible with mobilising a war economy. The direction in industry is towards worker ownership, and Ecotopians have discovered that a less alienated form of labour tends to be more energy efficient and less destructive of the environment.

Ecotopia is not just a pretty place in the country; its cities are its triumph: exuberant, colourful, busy and crowded. But also quiet, clean and beautiful. Creeks which had earlier been buried under the road to make way for the automobile, have been brought to the surface again and now run down the main streets lined with rocks, trees and ferns.

The book is made up of the diaries and newspaper stories of a journalist and sceptic, the first American to make an official visit in the twenty years since secession. The travelogue style allows the reader sidelights on the tax system, education, architecture, technology, love Ecotopian style, and their tentative experiments at sublimating aggression through war games. On the way, a brief tour of Ecotopian energy generation plants makes the alternative technologist's dream come true, with a forest of windmills above the rooftops of San Francisco, turning gently in the breeze blowing in from the blue Pacific (unpolluted along the Ecotopian coast, and probably *crowded* with whales). They run geothermal plants, solar farms and, interestingly, a number of atomic reactors, about which the author sounds duly apologetic, promising that they are 'located in remote and little inhabited areas' and which they plan to phase out as soon as possible.

Ecotopia is a pleasant and an easy read; not great literature but a good example of that strange human compulsion for creating utopias. It is interesting to compare Callenbach's model with your own, to criticise and to adjust. It is important to create some kind of a model, but if it is not to be a castle in the air with solar panels, it must be linked to action. A model is not an accurate picture of how things might be unless it is accompanied by a clear indication of how we can make them that way. Any utopia will necessarily be shaped by the process in which it is created. The atomic bomb trick ducks this question, for it seems unlikely that we will ever see such a charming piece of nuclear blackmail. At the same time, Callenbach is probably right in his opinion that terrorists cannot possibly be more irresponsible in their use of fissile material than the present owners have been.

Jonathan Sugden

GOOD HEAVENS!

LETTERS

Dear SfP

Having read issues 38 and 37 of your magazine, I would very much like to receive this on a regular basis. As a student of zoology in my second year, I find it essential to have access to facts and figures on the crucial topics within the scientific world. Right-wing ideology seems to have a firm grip on the biological sciences, in Manchester at least. In my own field, reactionary ideas in areas such as animal behaviour ("after all, doesn't socialism go against all our animal instincts", one of the more crude arguments), and population genetics, are all so easily taken up by politically less active students without question. Such ideas form a basis on which the complete acceptance and support of capitalist society can rest.

The way capitalism is often treated as a mirror image of selected animal communities, in order to justify every ill of society, by the media, schools and colleges (very often employing extremely subtle and concealed methods for transmitting such ideas) results in a blind acceptance of existing social functions by the majority of biology students. This is coupled with, in my case, the development of a considerable ultra-right wing force with basically little, if any, challenge facing it.

The low degree of political activity, the existence of only a very small socialist element means that the fight to establish an alternative to these ideas, and to bring sectors of the politically apathetic into the arena, is an uphill struggle to say the least.

However, undaunted, and with the knowledge that there *are* scientists with a similar point of view (I sometimes wonder, with only three other comrades in my department in the second year!), we keep chipping away at the ideological masonry!

Keep up the excellent work,
Simon Meddick

Dear SfP,

That's what I call a polite brush-off (intro to your "Letters" section, SfP No 39).

It really makes me wonder why I have bothered to belong to BSSRS all these years. You do a "special" issue containing serious omissions and misconceptions, I for once have access to some relevant specialised information, so I send it in, and then you don't use it.

Having said that you print all letters, the only honest thing to do would have been to shorten *all* the letters to fit the available space, or hold some over to the next issue, or make more space available.

I would be interested to hear whether any members of the collective had objections in principle to the contents of my* letter, and if so what they were.

Also — you have managed to give the impression that I was writing to you on behalf of CHC News, which I wasn't. I was writing as a long-term BSSRS member and SfP reader. I would like that corrected.

Best wishes — but do try and give a bit more thought to how you deal with people outside the collective.

Dave Bradney

PS: If you're looking for good material on male sexuality, I strongly recommend you contact the Men's Free Press Collective, c/o 7 St Mark's Rise, London E8. Have a look at issue 1 of their magazine Achilles Heel (in Compendium etc).

*No. You were invited to all the health Collective meetings - a shame you couldn't have voiced your dissent person to person there. Anyhow, don't give up on BSSRS
Best wishes
SfP

Dear Editorial Collective,

A Californian lay midwife, Marianne Doshi, is being charged with the murder of a baby which she delivered at home.

The parents, Christine and Robert Gannages, had chosen to have their third baby at home and make it a family affair. "We knew that things can happen, but we put our lives on the line every time we go on the highway." They had no wish to prosecute Marianne Doshi; it was the State of California, who have been waiting eagerly for such a test case, who brought the charges against her.

In California the only people who can legally serve as midwives are State Registered Nurses with additional training, and under the supervision of a doctor. Since these women are only employed in hospitals, home births are illegal. The large, and growing, numbers of lay midwives have, until this case, been able to keep open the choice of a home delivery for the pregnant woman. As Marianne Doshi says, "My arrest is not solely aimed at me, but is an attempt to intimidate parents who might choose to deliver their babies at home. That is their inalienable right — to choose where their children are going to be born. Babies die in hospital delivery rooms. Babies die at home. Both situations sadden me deeply."

Help is needed. Send money to Marianne Doshi Defence Fund, PO Box 522, San Luis Obispo, California 93406, USA.

Yours sincerely,
Jilly Rosser & Sue Rose,
Secretaries, Association of Radical Midwives.

Dear SfP Collective

Recently I saw a copy of your "Science for People" magazine and thought that some of your readers may be interested in our new film catalogue. Specifically I would like to draw your attention to our Trigger Films which are an attempt, through film, to provide the basis for a more radical approach to the area of Health Education. I am enclosing a copy of our catalogue in the hope that you might be able to include a mention of it in your review section. (Copies are available from Liberation Films at a cost of £0.50 plus £0.20 p&p.) The other possibility is that you might like to include in your next issue an article about our group and our methods of work. We would be more than willing to spend some time with anyone interested in writing such an article.

I hope that this does not sound too much like a push for free advertising. Obviously we are interested in increasing the distribution of our films but central to our work is the need to broaden our contacts, get opinions on our work so far and of course soak up ideas for new projects.

I hope that you find the catalogue of some interest.

Kim Dalton

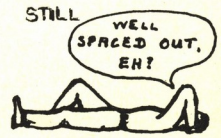
(Looks great — if the films are as interesting as the catalogue well worth contacting. SfP collective.)

Liberation Films, 2 Chichele Road, London NW2. 01-450 7855/6.

Dear Friends

Isaac Newton's appearance on the new pound note has an interesting and revealing feature additional to those which Jonathan Sugden suggests (SfP 39). The mathematical diagram not only relies on our ignorance, it reinforces it and indicates a contempt both for science and for people by misrepresenting Newton's work. The whole point of the Kepler-Newton tradition in this area is that the sun is at the focus S of the ellipse, not at the centre C. So the placing of the sun symbol at C carries the message that it doesn't matter for the people whether this particular magical diagram is right or wrong, since a) they're not to know and b) they have no control over it anyway.

With best wishes,
John Fauvel



LETTERS

Dear SfP readers,

Do you exist?

In SfP No. 39, we took a deal of trouble to write telling you about the Centre for Alternative Industrial and Technological Systems — visiting the Centre, reading the various literature and talking to people involved. We now understand from Mike George, CAITS' co-ordinator, that NO-ONE contacted them as a result of that article. So, what's happened to all those people who write in to BSSRS wanting something "useful" to do with their qualifications? And what of all those who complain that the choices for us grown-ups are restricted to working for the system or drawing the dole? Here at last is the chance to earn a wage working constructively against the system and where are the takers? CAITS currently have £4,000 p.a. on offer for someone to work on the hybrid power pack, are raising money for someone to work on the Third World power pack and are willing to try and raise the cash for anyone who approaches them to work on a project not yet funded.

In no. 39, we also put some thought into raising questions about science and technology in the future, inviting contributions from you so that we could have some hot debate on the letters pages. We've got one reply. Hardly the mind-stirring controversy we hoped for.

Working on SfP — and believe me, it does take up a lot of spare time and energy — is beginning to feel more and more like wrestling with the wind. So, give us some feedback — write what you think, however damning — and let's make Science for People a genuine forum for exchanging information and ideas about science and technology in the everyday world — not just a neat (?) 'revolutionary' package WE present to YOU for lining up on your bookshelf or whatever else you do with it.

Your optimistic comrade
Maryanne Gordon.

Dear Sirs (sic!)

I have been (rather belatedly) reading "science for People" no. 39 and especially the quotes on page 9 — "Can you imagine the sophisticated technologies all around us organised in a way that is non-hierarchical and non-elitist?" "How do you imagine that democracy of communication will be achieved in your utopia: . . ."

To the first I would answer "Yes, I can imagine it, but find it impossible to envisage the exact route to such an existence."

The second is easier and the enclosed method gives a completely non-hierarchical and very efficient way of ordering a group of people to solve problems.

The technique is sound and tested (one user said "It's bloody great, it really cuts out the waffle") the problems are no longer technical but psychological and political i.e. while people moan like mad about the old order they are loth to try anything new. This technique can be tested for an hour and, at the end, the group trying it will know whether or not it will work for them.

So I enclose a copy for you in the hopes that it may be of use to groups of your readers who are fed up of long discussions which lead nowhere or to readers who are teachers and feel that current methods of conducting a class are not as effective as they could be.

Yours faithfully,
John Baldwin.

The document enclosed, titled 'Baldwins Rules OK — A group problem solving method for teaching and decision-making' seems, at a glance to be a formula for what some man may do with a randomly-selected card with his name on it and a signalling system from his audience. It also requires a suitably-sized triangular prism. This is not to dismiss the idea out of hand, but we do feel that exchanging one set of rules and formulae for human behaviour for another (albeit a light-hearted game), doesn't help us to face one another in the raw and to overcome our basic conflicts without resorting to physical or emotional violence. If you want a copy of Baldwin's Rules, send 5p for photocopying and an s.a.e.

Typesetters' note: Sounds as though 'Men still trying to rule OK' would be a better title!

We originally received this letter with the author intending it to be an article. It hasn't been put in as an article mainly because we felt it did not fit in with the rest of the the copy. Richard was very keen for it to be included as a letter in that he didn't agree with many of the articles and felt his piece truly reflected where the anti-nuclear movement was at. We'd welcome comments from other readers.

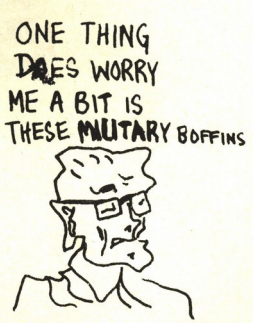
Dear SfP

The main problem with the Anti-Nuclear Movement is the people who think there is a problem. I've been sitting around racking my brains trying to identify the most important problem areas within the Movement and i've come up with some amazing dichotomies and contradictions. And all the time i've been reasonably satisfied with the way the Movement is developing, i've enjoyed all the demos i've been on, and i like our local group. Silly isn't it. I mean, politics isn't supposed to be fun, it's 'deadly serious', part of the 'long hard struggle' and it needs a 'clear theoretical analysis'. Yeah, well, i could be seriously dead from struggling long and hard to find a clear theoretical analysis of my left thumb, let alone Nuclear Power and its opposition.

Now don't get me wrong, there are problems in the Movement, and we do need theory. But we mustn't attach so much importance to either of these that it means ignoring more vital aspects. Such as . . . Well, getting involved in local and national demos and events. Getting out onto the streets with positive energy and ideas, talking with people instead of shouting at them. Raising the issues at branch meetings, at work, at play. Putting motions, passing motions, lobbying, publicising, writing for local, national and party papers. Whatever your choice or style. All these things are important. We won't achieve anything by just going on demos, equally we won't achieve anything by concentrating on those enigmatic saviours of socialism, the workers.

OK, so now we're getting there, right, there is a marked divergence of opinion over why and how to stop nuclear power. This is believed by many to be the root of most of the 'problems' of the Movement. I prefer to believe that it's the root of our strength. Sure, it's annoying when this manifests itself as pure polarisation, as at the post-Heysham evaluation session where you get such exchanges as "less shouting" — "more shouting", "more fun" — "less fun", "more singing" — "less singing". But the fact that here were 200 very different people sitting around in small groups talking about how the march went far outweighed the negative apsects of any polarisation. What's important to me is the *process* of discussion and decision-making, as well as the final outcome. And this most basic of all anarchist principles, that the means mirror the ends, that the process of decision-making within the movement mirrors that to which we aspire, this could not take place without divergence of opinion.

That's why i feel a bit hesitant about urging members of the left to involve themselves with opposition to nukes. Because



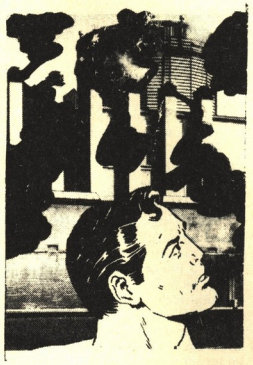
LETTERS

the emphasis placed, by most left groups, on small groups and the personal *as* political is sadly lacking, whereas their emphasis on confrontation style politics is all too prevalent. But i still urge, because i believe we can learn a lot from each other.

Fine, fine, but what about this strategy then? The one question that bugs me most is: to what extent does the state rely on nukes? I mean, how much of a struggle is it going to be? There is Germany, where if you're involved in opposition to nukes you're more or less classed as a terrorist. Then there's the USA, where it's almost fashionable, and Sweden, where a reactionary government can be elected on an anti-nuke stance (though they're having trouble fulfilling their pledge). The only answer i can come up with at the moment is that if we're going to convince this state to discontinue nukes, we're going to have to give them a reason they can use to justify their decision. The sorts of reasons FoE and SERA advance in their opposition to nukes more or less fall into this category, while the work SERA does within the labour movement provides a necessary bridge between the parliamentary-based reformism of FoE HQ, and those engaged in grass-roots action.

With regard to action, there are obviously all the various forms of local propaganda, especially in those communities near nuclear installations, and there is direct action. Here again there are two different areas, within and without as it were. We need the active support of people in a position to disrupt the nuclear cycle — those enigmatic workers again. They also play a large part in the development of alternatives, such as the now famous Lucas proposals. However, we equally need the support of those people who have been developing safe energy and living forms for the longest — the 'Alternative' movement. And we need to demonstrate how active our opposition to nukes is in such a way that again mirrors how we would like to live, viz. decentrally and nonviolently.

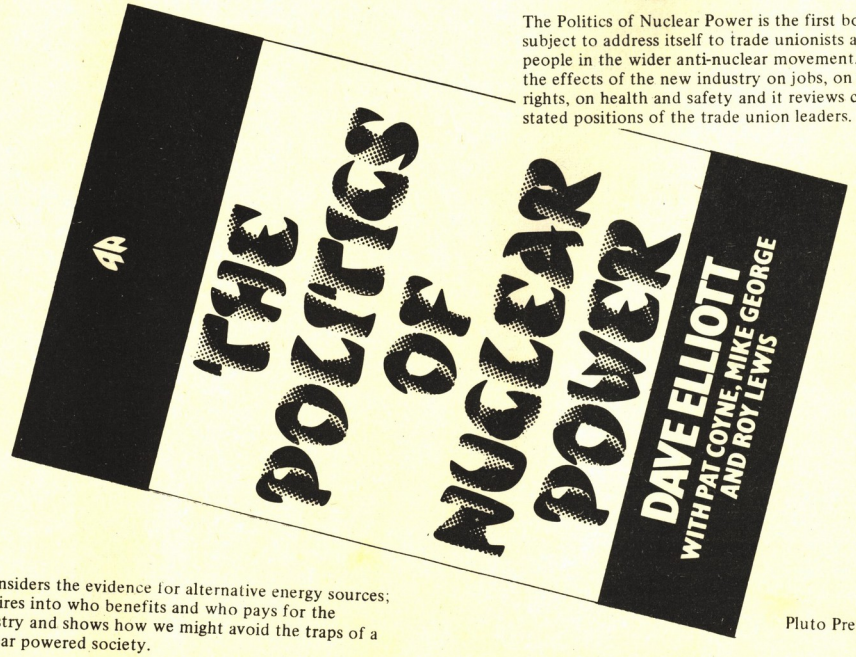
Why nonviolence? Well, obviously i can't give a complete exposition here (the best i know is Howard Clarke's pamphlet 'Making nonviolent revolution', 25p plus p&p from Peace News, 8 Elm Avenue, Nottingham), but it certainly isn't because it looks good or because it's a useful tactic for now. Violence is the ultimate means by which men, and the patriarchal state, retain their supremacy. Using violence to fight a violent state is like setting up a limited company to fight capitalism — stupid and dangerous.



Apart from that nonviolence is about challenging our present everyday lives and worldviews, discovering just how far patriarchy oppresses and intrudes upon us. And at the same time developing new styles, styles that combine communitarianism with struggle, imagination with feeling, and determination with sensitivity. It ain't easy.

To summarise then, i believe our strategy consists of four areas of struggle. Pressurising and challenging parliament and the authorities that be; publicising the issues in our local communities and workplaces and trying to gain support, even if only tacit, for our opposition; putting a lot of energy into building active opposition among the workers engaged in the nuclear cycle, and co-operating with those people developing alternative energy systems, helping them publicise their projects etc; partaking in nonviolent symbolic and direct actions, actions that demonstrate not only our opposition but also the joys to be had from a non-nuclear, non-patriarchal world. The next step is to co-ordinate co-operation between these areas of struggle and i guess i haven't helped matters much by being somewhat sectarian, but then i think we all need a bit of criticism.

Love and peace,
Richard Hull



The Politics of Nuclear Power is the first book on the subject to address itself to trade unionists as well as people in the wider anti-nuclear movement. It considers the effects of the new industry on jobs, on trade union rights, on health and safety and it reviews critically the stated positions of the trade union leaders.

It considers the evidence for alternative energy sources; enquires into who benefits and who pays for the industry and shows how we might avoid the traps of a nuclear powered society.

Pluto Press 1978

TRADE UNION BRIEFING CONFERENCE ON NUCLEAR POWER

SERA has organized a one-day conference for trade unionists on Nuclear Power and Energy Policy at Ruskin College, Oxford on November 25th. The aim is to stimulate discussion on trade union issues which might otherwise be overlooked – for example, the employment implications of nuclear investment as opposed to its alternatives and the implications for trade union rights. Workshop sessions are planned on Health and Safety, Employment, Alternative Energy Options and the Role of the Anti-nuclear Movement. Trade union delegates will be given preference. BSSRS members interested in attending should contact SERA, 9 Poland Street, London W1. 01-439-3749.

OXFORD COMMUNITY TECHNOLOGY WORKSHOP

Co-operatively-run Alternative Technology workshop has vacancies for committed people. Skills desirable but not essential – we especially want to get women involved. For details contact Oxford Comtek, 29 Castle Street, Oxford. Tel: 0865 48805.

RADICAL PHILOSOPHY are committing a whole issue of the journal to the problem of racism and the analysis of racist ideologies. For contributions or further information contact: Martin Barker, 7 Burghley Road, BRISTOL BS6 5BN.

The Women and Science Collective needs microscopes for future projects we'd like to do. If you have a microscope (or microscopes!) or have an idea about who we could contact to get one, please ring Janie or Sue (226-4610) or Gill or Jan (267-1974). Thanks.

NOVEMBER 23/24. There is a conference on UK Energy Requirements and the Fast Breeder Programme at the Polytechnic of the South Bank, Borough Road, London SE1.

The purpose of this conference is to explore the important facets of the Fast Breeder Reactor in the context of UK Energy Policy. This will be done through the presentation of expert papers by specialists in each field. Time is allocated for questions and brief discussion after each paper. Wherever possible the papers will be made available to those taking part in the conference. BSSRS members are especially welcome to help counterbalance the preponderance of 'establishment' participants.

AUSTRIA – URGENT.... STOP PRESS Nov. 6 1978
....AUSTRIA VOTES NO TO NUKES.....

In Austria there is to be a referendum on 12 November 1978 on "Zwetendorf" – whether or not to order Austria's first nuclear reactor. The Austrian Association of Working Groups opposing the immediate order of a station are skint and in urgent need of support.

Austria: the highly social democratic set-up in the country means high collusion between trade union leaders, government officials, top management and industrialists. For example, the chairman of the biggest nationalised firm's work council has just been appointed to the government post of director of the holding company for all the nationalised industries. More generally, the Austrian 'social contract' between government and TUs has held for eight years, with easy assent in the prosperous post-war days, after such catastrophe in the 'thirties and 'forties. With the oil crisis, the unified establishment slithered unchallenged into favouring nuclear power, accepting the 'jobs' and 'growth needs energy growth' arguments hook, line and sinker. They were massaged by the International Atomic Energy Agency, the Vienna-based world centre of civil nuclear power. The opponents of nuclear power are now trying to rally, and though they are mainly academically based, some trade unionists are involved, seeing through the Establishment's £1¼million propaganda campaign.

The Association plea for 1) urgent lobbying of Westminster against Zwentendorf, 2) telegrams, letters to the President of the Austrian Parliament, and to the Chancellor of the Government, demanding equal access to all public media for the anti-Zwentendorf movement, 3) donations.

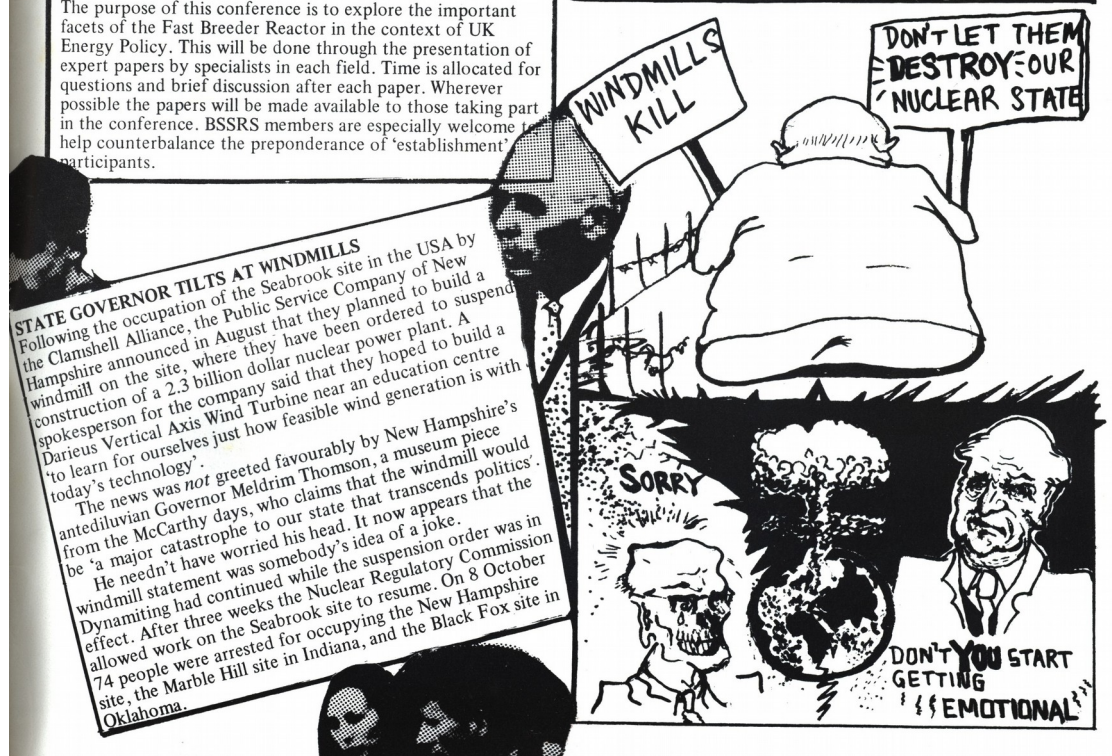
Addresses: Anton Benyo, President of Austrian Parliament, 1010 Vienna, Austria. Dr. Bruno Kreisky, Bunderkanzlerant, A-1010 Vienna, Austria. Austrian Association of Working Groups (a/c for donations: Osterreichischer Postsparkasse, Kriesenkanto Volksabstimmung, PSK Kto. 704 2391). More details, Nuclear In-tray, BSSRS, 9 Poland Street, London W1. 'Interessenverband Arbeitsgemeinschaft "Nein zu Zwentendorf" ', Zentrale Koordinationsstelle; 1090 Wein, Liechtensteinstrasse 13, Austria.

STATE GOVERNOR TILTS AT WINDMILLS

Following the occupation of the Seabrook site in the USA by the Clamshell Alliance, the Public Service Company of New Hampshire announced in August that they planned to build a windmill on the site, where they have been ordered to suspend construction of a 2.3 billion dollar nuclear power plant. A spokesperson for the company said that they hoped to build a Darieus Vertical Axis Wind Turbine near an education centre 'to learn for ourselves just how feasible wind generation is with today's technology'.

The news was *not* greeted favourably by New Hampshire's antediluvian Governor Meldrim Thomson, a museum piece from the McCarthy days, who claims that the windmill would be 'a major catastrophe to our state that transcends politics'. He needn't have worried his head. It now appears that the windmill statement was somebody's idea of a joke.

Dynamiting had continued while the suspension order was in effect. After three weeks the Nuclear Regulatory Commission allowed work on the Seabrook site to resume. On 8 October 74 people were arrested for occupying the New Hampshire site, the Marble Hill site in Indiana, and the Black Fox site in Oklahoma.



HERE'S GENUINE JOB SECURITY FOR YOU

Navy News Jan'78

BRITISH NUCLEAR FUELS LTD

Choosing the right career in Civvy Street can be a task. That's why it's good to know the terrific opportunities open for you at Windscale & Calder, working for British Nuclear Fuels Limited. You'll have a secure job in one of Britain's most picturesque locations–the Cumbrian Coastline, half an hour's drive from the Lake District.

A satisfying, varied career with unrivalled opportunities for outdoor activities and a terrific social life.
So, if you are due to leave the Service in the next couple of months, contact us today. Don't hesitate. Find out the details. Make a fresh start — Move up to Windscale.

Write now for an application form....

SECURITY QUESTIONNAIRE FOR ALL APPLICANTS TO THE NUCLEAR INDUSTRY

The Government has decided that special enquiries must be made about the reliability of those whose employment puts them in touch with information of particular importance from the point of view of security. In view of the nature of the duties you are likely to perform in the future, it is now thought necessary that such enquiries should be made in your case. The enquiries which will be made will not necessarily be confined to the former and present employers and character referees named in your answers to questions 8 and 15.

PARTICULARS OF SELF, SPOUSE/FIANCE(E)†, FATHER AND MOTHER. [†Give corresponding details of any former spouse or any person who is regarded or lives as your wife/husband.]

1 SURNAME. (a) Now.
(b) At birth, if different from (a)
(c) All other surnames used, including former married names.

2 FULL FORENAMES.

3 PLACE OF BIRTH including county, state and country.

4 DATE OF BIRTH.

5 NATIONALITY. (a) Now.
(b) At any time if different from (a).
(c) If naturalised or registered as a citizen of the UK & Colonies state number and date of certificate.

6 ADDRESSES. (a) Full permanent address.
(b) Temporary address if any.
(c) Other addresses in the UK during the last 10 years with dates.
(d) Addresses outside the UK at any time for more than 6 months with dates.

7 PRESENT OCCUPATION.

8 EMPLOYMENT. (a) HM Forces and UK Government Service. If you have at any time served in HM Forces or a UK Government Department (for this purpose including the Atomic Energy Authority, the Civil Aviation Authority and the Post Office) state particulars.
(b) Employment other than in HM Forces or UK Government Service. Give particulars, with dates, of all such employment or any full-time education during the last 10 years.

9 RELATIVES IN COMMUNIST COUNTRIES. Have you any relative by blood or marriage who is living or has lived in a country having, at the time of residence, a Communist Government? Please answer YES or NO. Where the answer is YES, give full name, age, relationship, nationality and address(es) with dates.

10 TRAVEL TO COMMUNIST COUNTRIES. Have you at any time visited or resided in a country having at the time of visit or residence a Communist Government? Please answer YES or NO. Where the answer is YES, give country, reason for visit or residence and dates.

Quetions 11 to 14 should all be answered YES or NO. If the answer to any question is YES give full details. An affirmative answer will not necessarily disqualify you for appointment, but in accordance with Government policy it must be taken into consideration before you are permitted to be employed on secret work.

In answering Questions 11 and 12 you should take into account not merely your own belief but also the opinion which is generally held of the organisation or person in question, even if you do not endorse that opinion.

11 (a) Have you ever been a member of or in sympathy with any Communist, Trotskyist or Fascist organisation in the UK or elsewhere?
(b) Have you ever had any connection with any group or movement associated or in sympathy with a Communist, Trotskyist or Fascist organisation?
(c) Have you ever been a close associate of a person who to your knowledge is or has been a Communist, Trotskyist or Fascist?

12 Have you ever been a member of, or in sympathy with, any organisation (not covered in your reply to Question 11) which advocates or practises unconstitutional activities in pursuit of its political objectives?

13 (a) Have you at any time been convicted or found guilty by a Court of any offence (excluding parking but including motoring offences) or have you been put on probation or absolutely or conditionally discharged or bound over after being charged with any offence, or is any action pending against you?*
(b) Have you ever been either convicted by a Court Martial or sentenced summarily to detention and/or dismissal whilst serving in the Armed Forces of the UK or of any Commonwealth or foreign country?

* In accordance with Article 3(b) of the Rehabilitation of Offenders Act 1974 (Exceptions) Order 1975, spent convictions are to be disclosed for the purposes of safeguarding national security.

14 Are you aware of any circumstances or characteristics (including any of a medical nature) not covered by your previous replies which might cause your suitability for employment on secret work to be questioned?

15 CHARACTER REFEREES. Give particulars of two British subjects (NOT relatives) resident in the UK who have been *well acquainted with you in private life for the past 5 years.* It is not sufficient to nominate someone you know in an official or professional capacity, such as your doctor, unless you know him socially as well. Similarly staff members of a school, college or university should not be nominated unless they are close personal friends. If you have lived overseas in the past 5 years one or both of your nominations should be British subjects who have known you abroad and who are now in the UK.